APPENDIX A

DETAILED DATA REDUCTION PROCEDURE

APPENDIX A
DETAILED METHODS FOR DATA REDUCTION

1.0 INTRODUCTION

The basic method used to estimate the RBA of arsenic in a particular test material compared to arsenic in a reference material (sodium arsenate) is as follows:

1. Plot the amount of arsenic excreted in the urine (µg/day) as a function of the administered amount of arsenic (µg/day), both for reference material (sodium arsenate) and for test material.
2. Find the best fit linear regression line through each data set. The slope of each line (µg/day excreted per µg/day ingested) is the best estimate of the urinary excretion fraction (UEF) for each material.
3. Calculate RBA for each test material as the ratio of the UEF for test material compared to UEF for reference material:

$$RBA = UEF(test) / UEF(reference)$$

The following sections provide details regarding the implementation of this basic procedure.

2.0 ADJUSTMENTS TO RAW DATA

2.1 Values Below the Limit of Quantitation

In some cases, some or all of the urinary arsenic concentrations in a group of animals were below the quantitation limit. For example, this was sometimes the case for unexposed (control) animals, and also occurred in some cases for animals given low doses of arsenic in test materials and/or for test material with low arsenic bioavailability. In these cases, all animals in which urinary arsenic levels were below the quantitation limit were evaluated as if the concentration were one-half the quantitation limit. This approach was used because an assumed value of one-half the detection limit minimizes the potential bias in the assumption.

2.2 Exclusion of Unreliable Values

In some instances, animals spilled drinking water into their urine collection trays. The result was that the urine volume became very large due to the water entering the collection tray, and the arsenic concentration in the diluted urine became very small and difficult to measure with accuracy. Because the mass excreted is estimated as the product of urine concentration and volume, there is high uncertainty when an uncertain concentration is multiplied by a very large volume. For this reason, cases where total urine volume per 24-hour period was more than 5 L and the measured urine concentration of arsenic was at or below the quantitation limit (2 µg/L) were judged to be unreliable and were excluded from the quantitative analysis. Of all the results (N = 1630), a total of 27 results (1.7%) were excluded for this reason.

3.0 CONSOLIDATION OF DATA ACROSS TIME

As noted earlier, the study design employed in the measurement of arsenic excretion employed a repeated-dosing protocol (two doses per day for 12–15 days). This protocol is based on the expectation that repeated exposures will result in a sort of “steady state” in an exposed animal, with the amount of arsenic excreted in urine each day being a constant fraction of the amount administered.

In order to investigate the duration of exposure required to reach steady state, two experiments were performed in which the urinary excretion fraction was measured as a function of time. The results are shown in Figure A-1. In the upper panel (Phase II Experiment 10), the excretion fractions for sodium arsenate administered by intravenous infusion and the test material appear to be approximately constant from day 2 and beyond. The UEF for sodium arsenate administered orally appears to be low initially (day 2), but is approximately constant on day 5 and beyond. In the lower panel (Phase III Experiment 5), excretion rates appear to be approximately constant beginning as early as day zero for sodium arsenate and the two test materials. Taken together, these data suggest that steady state is usually reached very promptly in exposed animals. The reason that UEF is low on day 2 for orally administered sodium arsenate in Phase II Experiment 10 is not known, but it is considered possible there is an error of unknown origin in that particular value. Nevertheless, in order to account for the possibility that steady state might not be reached for several days in animals exposed to some types of test material, all studies focused on urine samples collected on day 6 or later.

Because most studies collected urine samples on several different days (e.g., days 7 and 14 in most Phase II studies, or days 6–7, 8–9, and 10–11 in most Phase III studies), the data from each collection period were analyzed both individually and combined. Because UEF is approximately independent of study day after days 5 (and probably earlier), the combined data set was used to provide the best estimate of UEF.

4.0 DETAILED REGRESSION FITTING PROCEDURE

The techniques used to derive linear regression fits to the dose-response data are based on the methods recommended by Finney (1978). All model fitting was performed in Microsoft Excel® using matrix functions.

4.1 Use of Simultaneous Regression

As noted by Finney (1978), when the data to be analyzed consist of two dose-response curves (the reference material and the test material), it is obvious that both curves must have the same intercept, since there is no difference between the curves when the dose is zero. This requirement is achieved by combining the two dose response equations into one and solving for the parameters simultaneously, as follows:

Separate Models:

$$\mu_r(i) = a + b_r \cdot x_r(i)$$
$$\mu_t(i) = a + b_t \cdot x_t(i)$$

Combined Model

$$\mu(i) = a + b_r \cdot x_r(i) + b_t \cdot x_t(i)$$

where $\mu(i)$ indicates the expected mean response of animals exposed at dose x(i), and the subscripts r and t refer to reference and test material, respectively. The coefficients of this combined model are derived using multivariate regression, with the understanding that the combined data set is restricted to cases in which one (or both) of x_r and x_t are zero (Finney, 1978). The same approach may be extended for use when there are three data sets (reference material, test material 1, test material 2) that are all derived from a single study and must therefore all have the same intercept.

4.2 Use of Weighted Regression

Regression analysis based on ordinary least squares assumes that the variance of the responses is independent of the dose and/or the response (Draper and Smith, 1998). In these studies, this assumption is

generally not satisfied. Figure A-2 provides example data sets that show a clear increase in variability in response (mass of arsenic excreted) as a function of increasing dose. This is referred to as heteroscedasticity. Most other data sets from this study display a similar tendency toward increasing variance in response as a function of increasing dose.

One method for dealing with heteroscedasticity is through the use of weighted least squares regression (Draper and Smith, 1998). In this approach, each observation in a group of animals is assigned a weight that is inversely proportional to the variance of the response in that group:

$$w_i = \frac{1}{\sigma_i^2}$$

w_i = weight assigned to all data points in dose group i
σ_i^2 = variance of responses in animals in dose group i

When the distributions of responses at each dose level are normal, weighted regression is equivalent to the maximum likelihood method.

Variance Model

One approach for estimating the value of F2i is to assume that F2i is identical to the observed value of the sample variance for each dose group:

$$\sigma^2_i = s^2_i$$

This approach was not employed because sample variance is a relatively unstable statistic, especially when the number of animals is only 3–5. That is, due to random variation, the observed sample variance may be substantially smaller or larger than the true variance, and this could result is assignment of inappropriately high or low weights to the data during the fitting process. In order to minimize this problem, F2 i was estimated using an "external" variance model developed from observation of the relationship between variance and mean response across many studies. Figure A-3 presents the observed relationship between the log-variance in response (mass of arsenic excreted) plotted as a function of the log-mean response in all exposures groups[1] from all studies. As seen, log-variance increases as an approximately linear function of log-mean response:

$$\ln(s_i^2) = k1 + k2 \cdot \ln(\bar{y}_i)$$

Even though the data from all dose groups tend to lie on approximately the same line, it was suspected that there might be a difference in the magnitude of the variance between different sub-elements of the combined data set (e.g., Phase II vs. Phase III, oral vs. IV, test material vs. NaAs, etc.). Therefore, the data were stratified into a number of different sub-sets and the variance models based on the different sub-sets were compared for equality as described by Sachs (1984):

$$\hat{F} = \frac{(n-2k)\left[Q_t - \sum Q_i\right]}{(2k-2)\sum Q_i}$$

[1] In this analysis, some dose groups were excluded if the estimate of variance and/or mean response was judged to be unreliable, based on the following two criteria: a) the number of animals in the dose group was #2, or b) there was more than one urine sample that was below the limit of detection.

where:

n = total number of data pairs in the combined data set
k = number of data sub-sets being tested for equality
Q_t = sum of square errors for the combined data set
Q_i = sum of square errors for the i^{th} data sub-set

The resulting statistic (^F) is distributed as an F distribution with (2k-2) and (n-2k) degrees of freedom. Values of ^F lower than the critical value (" = 0.05) indicate that the individual regression lines are not statistically different from the combined regression line.

The results are shown in Table A-1. As seen, there was no consistent difference in variance models between groups exposed to sodium arsenate and test material, or as a function of collection day. However, a consistent difference was detected in the variance models for oral exposure groups from Phase II and from Phase III. This is perhaps expected, because data from Phase II utilized 24-hour urine collection periods, while Phase III utilized 48-hour collection periods specifically to reduce variation due to random differences in the time of urination by different animals. There was also a consistent difference detected in the variance models for sodium arsenate oral exposure in Phase II and intravenous sodium arsenate exposure in Phase II. This is perhaps also expected, since there are fewer sources of variability for intravenous injection than oral exposure groups.

Based on this analysis, three different variance models were established, as follows:

Data Set	k1 (Intercept)	k2 (Slope)
Phase II Oral	-1.89	1.93
Phase II Intravenous	-1.11	1.50
Phase III Oral	-1.10	1.64

These variance models are shown in Figures A-4 through A-6. 4.3

4.3 Goodness of Fit

Goodness-of-fit was assessed using the F test statistic and the adjusted coefficient of multiple determination (Adj R2), calculated as follows (Draper and Smith, 1998):

$$F = MSE(fit) / MSE(error)$$

$$Adj\ R^2 = 1 - MSE(error) / MSE(total)$$

where:

$$MSE(fit) = \sum w_i \cdot (\mu_i - \bar{y}^*)^2 \ / (p-1)$$

$$MSE(error) = \sum w_i \cdot (\mu_i - y_i)^2 \ / (n-p)$$

$$MSE(total) = \sum w_i \cdot (y_i - \bar{y}^*)^2 \ / (n-1)$$

and:

$$\bar{y}^* = \sum (w_i \cdot y_i) / \sum w_i$$

p = number of parameters in model
n = number of observations (animals)

F is distributed as an F distribution with (p-1) and (n-p) degrees of freedom. Models with p values larger than 0.05 were not considered to be acceptable.

4.4 Assessment of Outliers

In biological assays, it is not uncommon to note the occurrence of individual measured responses that appear atypical compared to the responses from other animals in the same dose group. For the purposes of this program, endpoint responses that yielded standardized weighted residuals greater than 3.5 or less than -3.5 were considered to be potential outliers (Canavos, 1984). Of all the results (N = 1630), a total of 14 results (<1%) were designated as outliers. When such data points were encountered in a data set, the UEF and RBA values were calculated both with and without the potential outlier(s) excluded, and the result with the outlier excluded was used as the preferred estimate.

5.0 CALCULATION OF RBA AND CHARACTERIZATION OF UNCERTAINTY BOUNDS

Each RBA value is calculated as the ratio of the slope term the test material data set and the reference material data set:

$$RBA = b_t / b_r$$

However, there is uncertainty in the estimates of the model coefficients in both the numerator and denominator and, hence, there is uncertainty in the ratio. As described by Finney (1978), the fiduciary limits (uncertainly range) about the ratio R of two model coefficients may be calculated using Fieller's Theorem:

$$LB, UB = \frac{R - g \cdot \frac{covar_{r,t}}{var_r} \pm \frac{t}{b_r}\sqrt{W}}{1 - g}$$

$$W = var_t - 2 \cdot R \cdot covar_{t,r} + R^2 \cdot var_r - g\left(var_r - \frac{covar_{r,t}^2}{var_r}\right)$$

$$g = \frac{t^2}{b_r^2}\,\mathrm{var}_r$$

where:

LB = Lower bound of the fiduciary range
UB = Upper bound of the fiduciary range
R = ratio (b_t / b_r for linear model, c_t / c_r for exponential model)
var_r = variance in the coefficient for the reference material
$covar_{r,t}$ = covariance in the coefficients for the reference and test materials
b_r = coefficient for the reference material (cr in the case of the exponential model)
t = t statistic for alpha (0.05) and (n-p) degrees of freedom

The interval between the LB and the UB is the 95% confidence interval for the ratio R.

When g is small (<0.05), the variance of the ratio is approximated as (Finney, 1978):

$$var(R) = \frac{var_t - 2 \cdot R \cdot covar_{r,t} + R^2 \cdot var_r}{b_r^2}$$

6.0 REFERENCES

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TABLE A-1. COMPARISON OF VARIANCE MODELS

Comparison		Criteria		N	Intercept	Slope	Outcome	F	F critical	p-value
Phase II vs. III	All urine collection intervals	All oral data + controls	Phase II	85	-1.89	1.93	**Different**	3.43	3.03	0.0337
			Phase III	204	-1.10	1.64				
		NaAs (Oral) + controls	Phase II	32	-1.89	1.95	**Different**	3.58	3.08	0.0314
			Phase III	78	-0.74	1.58				
		TM (Oral) + controls	Phase II	61	-1.66	1.84	Not Different	0.76	3.04	0.4713
			Phase III	150	-1.15	1.65				
	24-hour urine collections only	All oral data + controls	Phase II	85	-1.89	1.93	Not Different	1.70	3.06	0.1865
			Phase III	57	-1.32	1.71				
		NaAs (Oral) + controls	Phase II	32	-1.89	1.95	**Different**	9.58	3.20	0.0003
			Phase III	18	-0.08	1.36				
		TM (Oral) + controls	Phase II	61	-1.66	1.84	Not Different	0.02	3.09	0.9777
			Phase III	45	-1.60	1.81				
Phase II	NaAs vs. TM	All oral data, no controls	NaAs	24	-2.37	2.06	Not Different	0.55	3.13	0.5822
			TM	47	-1.67	1.83				
		All oral data, + controls	NaAs (+ controls)	32	-1.89	1.95	Not Different	0.29	3.10	0.7479
			TM (+ controls)	61	-1.66	1.84				
	By Day	All oral data + controls	Days ≤0	12	-3.43	3.09	Not Different	0.59	2.50	0.6675
			Days 5–8	33	-1.76	1.84				
			Days 11–14	33	-2.03	2.00				
		NaAs (Oral) + controls	Days ≤0	4	-2.38	2.15	Not Different	0.23	2.80	0.9180
			Days 5–8	12	-1.39	1.84				
			Days 11–14	13	-2.18	2.02				
		TM (Oral) + controls	Days ≤0	10	-5.01	4.30	Not Different	1.55	2.56	0.2021
			Days 5–8	23	-1.03	1.53				

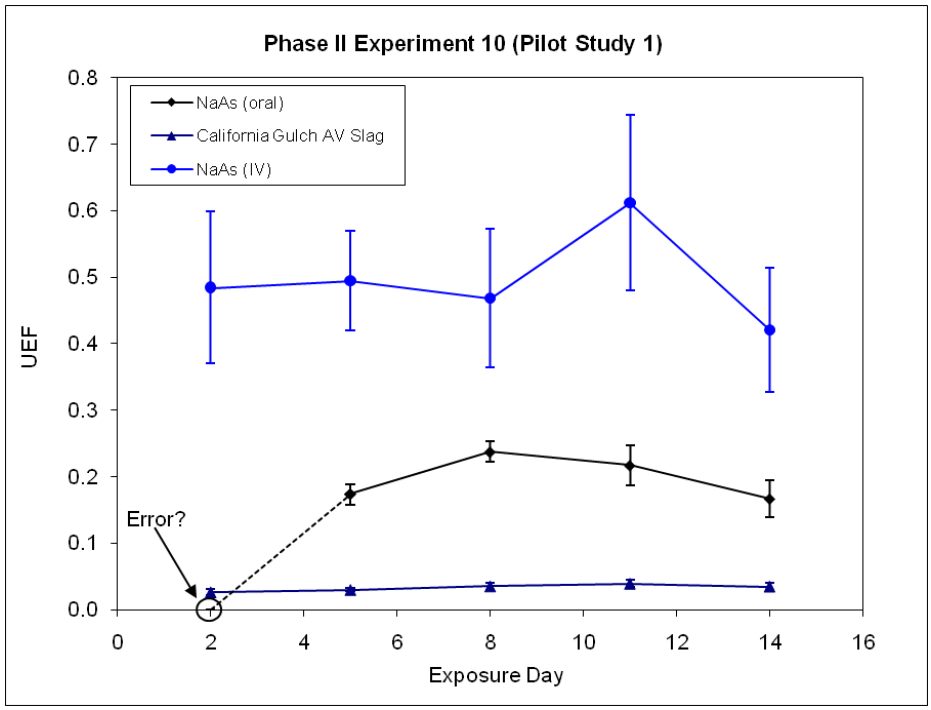
TABLE A-1. COMPARISON OF VARIANCE MODELS

Comparison		Criteria		N	Intercept	Slope	Outcome	F	F critical	p-value
			Days 11–14	23	-1.81	1.96				
	IV vs. Oral	NaAs (Oral), no controls	IV	8	0.09	1.18	**Different**	5.37	3.34	0.0106
			Oral	24	-2.37	2.06				
		NaAs (Oral) + controls	IV	16	-1.11	1.49	**Different**	4.39	3.18	0.0175
			Oral	38	-1.91	1.97				
	Gavage vs. Oral	NaAs (Oral), no controls	Gavage	8	-1.47	1.69	Not Different	1.45	3.34	0.2510
			Oral	24	-2.37	2.06				
		NaAs (Oral) + controls	Gavage	16	-1.39	1.69	Not Different	1.88	3.18	0.1635
			Oral	38	-1.91	1.97				
Phase III	NaAs vs. TM	All oral data, no controls	NaAs	54	-1.04	1.63	Not Different	0.56	3.05	0.5694
			TM	126	-2.01	1.80				
		All oral data, + controls	NaAs (+ controls)	78	-0.74	1.58	Not Different	0.27	3.04	0.7660
			TM (+ controls)	150	-1.15	1.65				
	24- vs. 48-hour collections	All oral data, + controls	24-hour collections	57	-1.32	1.71	Not Different	0.89	3.04	0.4139
			48-hour collections	147	-1.04	1.62				
		NaAs (Oral) + controls	24-hour collections	18	-0.08	1.36	Not Different	1.73	3.12	0.1847
			48-hour collections	60	-0.90	1.62				
		TM (Oral) + controls	24-hour collections	45	-1.60	1.81	**Different**	3.71	3.06	0.0269
			48-hour collections	105	-0.81	1.56				
	By Day	All oral data, + controls	Days ≤0	29	-1.21	1.71	Not Different	0.39	2.15	0.8817

TABLE A-1. COMPARISON OF VARIANCE MODELS

Comparison		Criteria		N	Intercept	Slope	Outcome	F	F critical	p-value
			Days 5–7	52	-1.25	1.66				
			Days 8–9	57	-1.42	1.66				
			Days 10–14	66	-0.90	1.63				
		NaAs (Oral) + controls	Days ≤0	12	-0.52	1.44	Not Different	0.43	2.23	0.8547
			Days 5–7	19	-1.05	1.64				
			Days 8–9	22	-1.22	1.63				
			Days 10–14	25	0.33	1.43				
		TM (Oral) + controls	Days ≤0	21	-1.73	1.86	Not Different	0.71	2.16	0.6411
			Days 5–7	39	-0.71	1.55				
			Days 8–9	42	-1.41	1.66				
			Days 10–14	48	-0.83	1.63				

FIGURE A-1. TIME COURSE OF ARSENIC EXCRETION



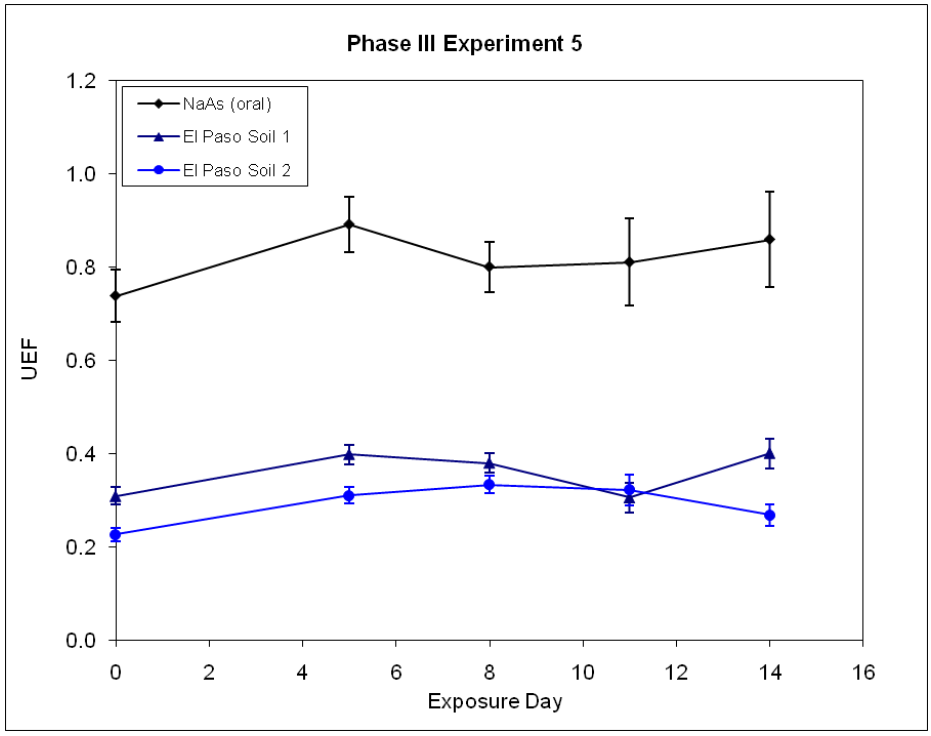


FIGURE A-2. EXAMPLE OF HETEROSCEDASTICITY
Phase II Pilot Study (Experiment 10)

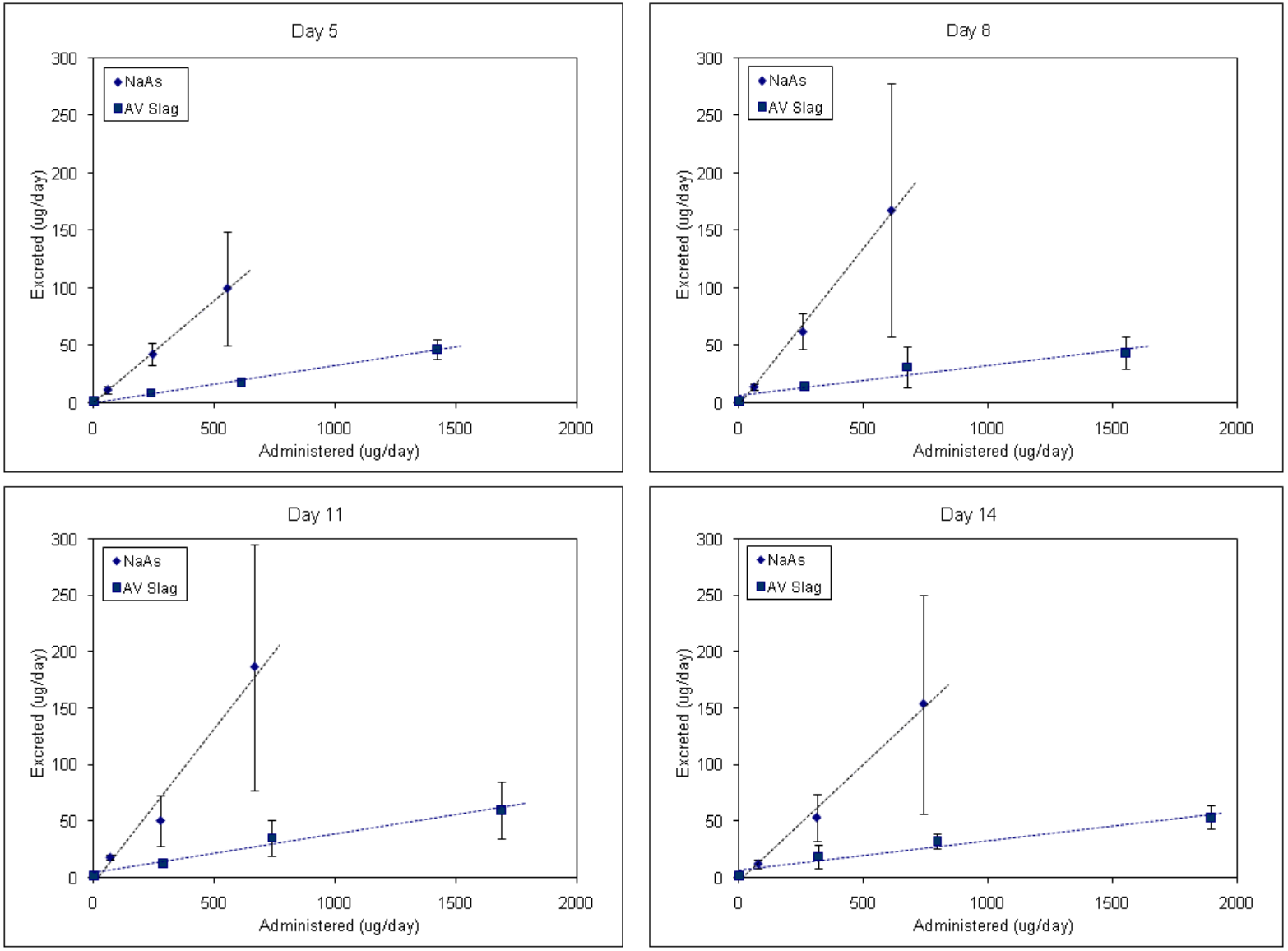


FIGURE A-3. VARIANCE MODEL FOR ALL DATA

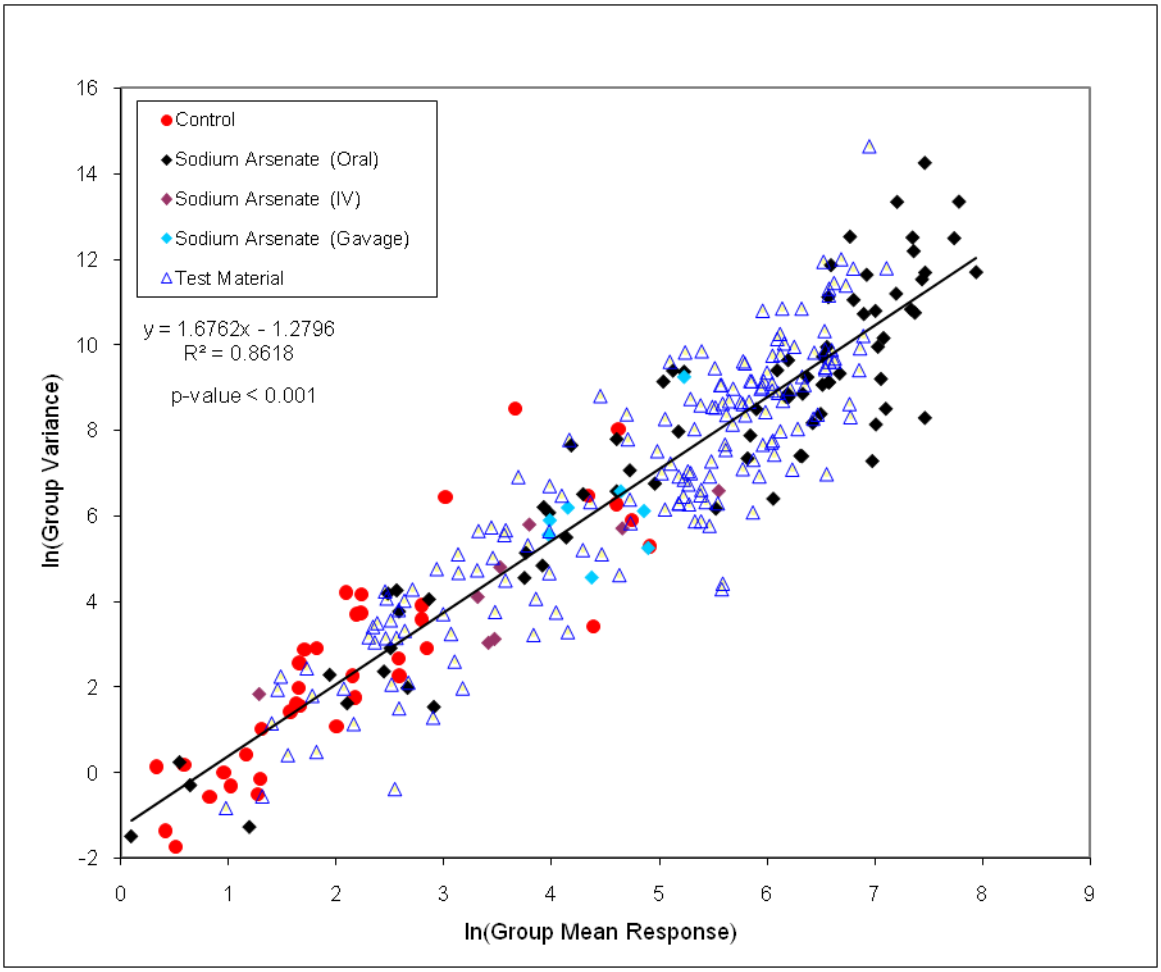


FIGURE A-4. VARIANCE MODEL FOR PHASE II ORAL DATA
Data Quality Exclusion Rules Enforced

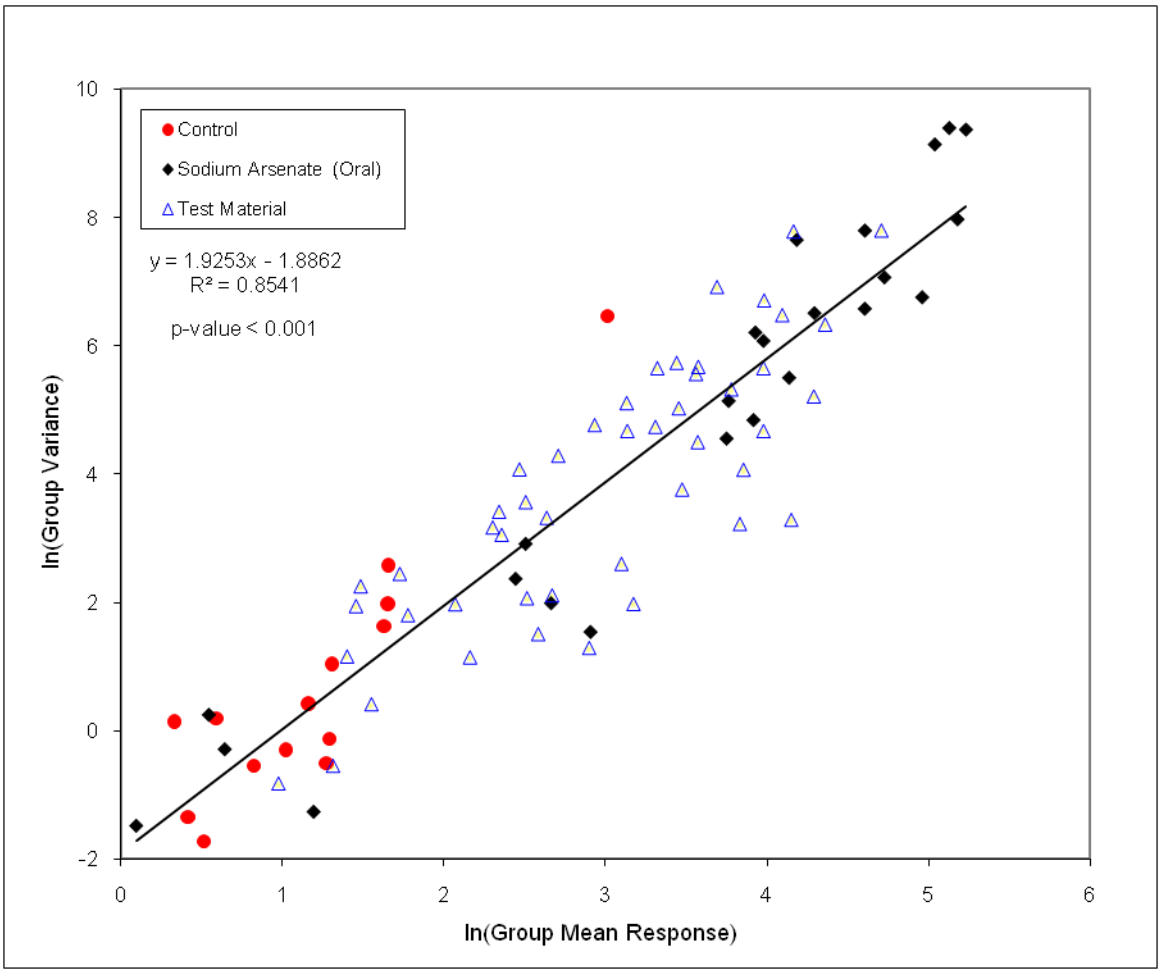


FIGURE A-5. VARIANCE MODEL FOR PHASE III ORAL DATA
Data Quality Exclusion Rules Enforced

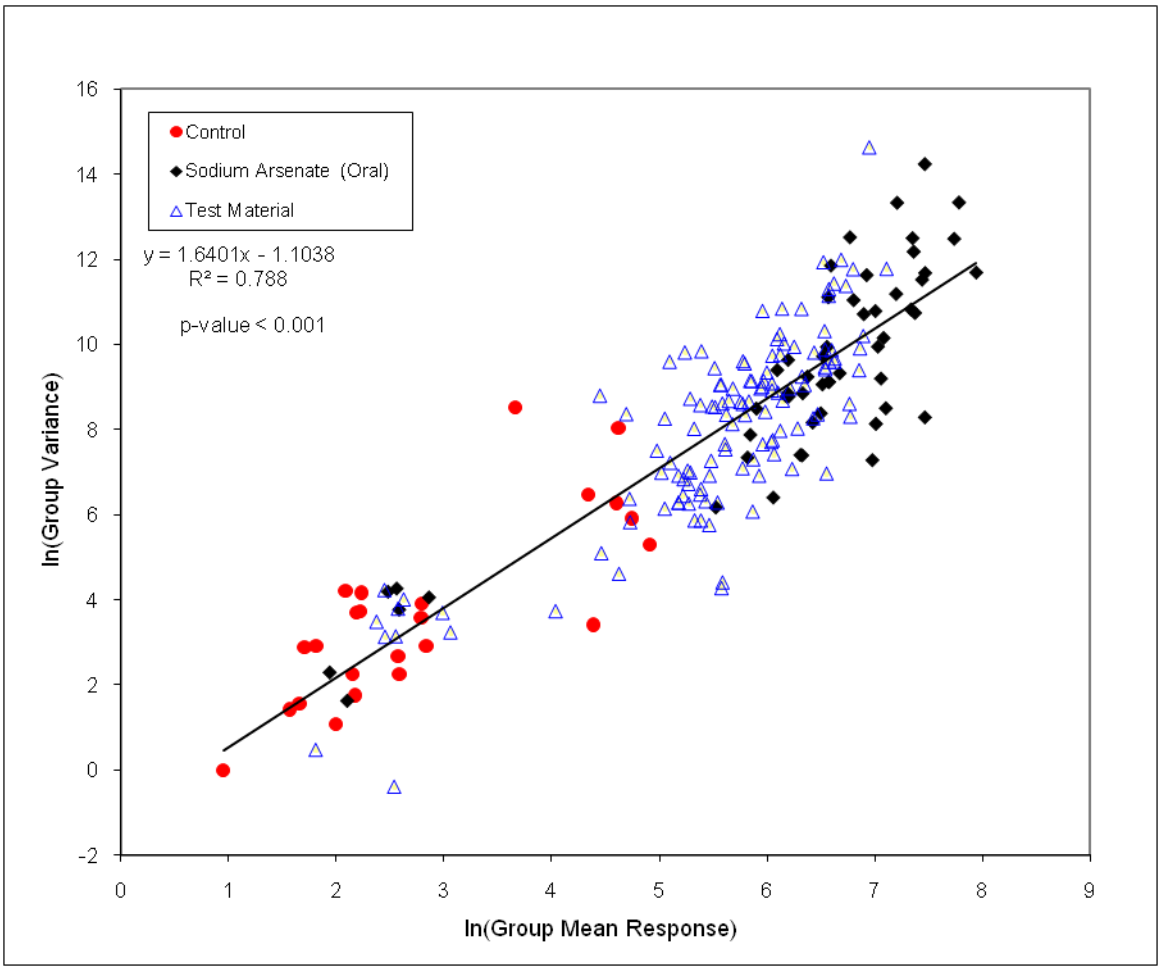
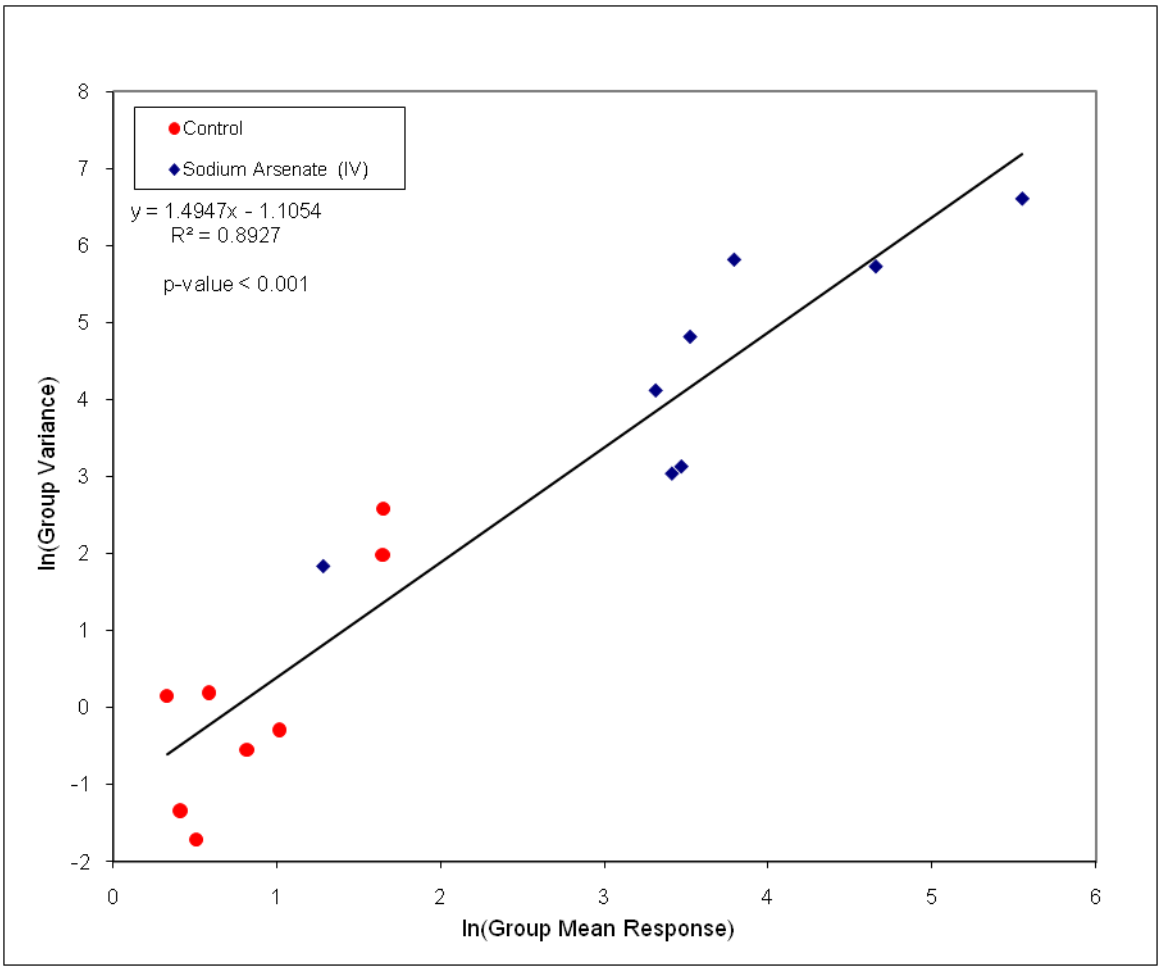


FIGURE A-6. VARIANCE MODEL FOR PHASE II IV DATA
Data Quality Exclusion Rules Enforced



APPENDIX B

STUDY DESIGNS

Appendix B1: Phase II Study Designs

Phase II Experiment 2

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	2
2	Reference Material	Lead Acetate (oral)	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Reference Material	Lead Acetate (oral)	–	–	0	5
5	Test Material 1	Bingham Creek Residential	*	*	*	5
6	Test Material 1	Bingham Creek Residential	*	*	*	5
7	Test Material 1	Bingham Creek Residential	*	*	*	5
8	Test Material 2	Bingham Creek Channel Soil	149	13	2	5
9	Test Material 2	Bingham Creek Channel Soil	149	34	5	5
10	Test Material 2	Bingham Creek Channel Soil	149	106	16	5
11	Reference Material	Lead Acetate (IV)	–	–	0	8

* Sample not evaluated for arsenic RBA

Phase II Experiment 4

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	2
2	Reference Material	Lead Acetate (oral)	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Test Material 1	Murray Smelter Slag	695	7	5	5
5	Test Material 1	Murray Smelter Slag	695	20	14	5
6	Test Material 1	Murray Smelter Slag	695	59	41	5
7	Test Material 2	Jasper County High Lead Mill	*	*	*	5
8	Test Material 2	Jasper County High Lead Mill	*	*	*	5
9	Test Material 2	Jasper County High Lead Mill	*	*	*	5
10	Reference Material	Lead Acetate (IV)	–	–	0	8

* Sample not evaluated for arsenic RBA

Phase II Experiment 5

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	2
2	Reference Material	Lead Acetate (oral)	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Test Material 1	Aspen Berm	*	*	0.4	5
5	Test Material 1	Aspen Berm	*	*	1.1	5
6	Test Material 1	Aspen Berm	*	*	3.2	5
7	Test Material 2	Aspen Residential	*	*	0.3	5
8	Test Material 2	Aspen Residential	*	*	1.0	5
9	Test Material 2	Aspen Residential	*	*	2.9	5
10	Reference Material	Lead Acetate (IV)	–	–	0	8

* Sample not evaluated for arsenic RBA

Phase II Experiment 6

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	2
2	Reference Material	Lead Acetate (oral)	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Test Material 1	Midvale Slag	591	8	5	5
5	Test Material 1	Midvale Slag	591	27	16	5
6	Test Material 1	Midvale Slag	591	83	49	5
7	Test Material 2	Butte Soil	234	9	2	5
8	Test Material 2	Butte Soil	234	26	6	5
9	Test Material 2	Butte Soil	234	77	18	5
10	Reference Material	Lead Acetate (IV)	–	–	0	8

Phase II Experiment 7

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	5
2	Reference Material	Lead Acetate (oral)	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Test Material 1	California Gulch Phase I Residential Soil	203	5	1	5
5	Test Material 1	California Gulch Phase I Residential Soil	203	10	2	5
6	Test Material 1	California Gulch Phase I Residential Soil	203	30	6	5
7	Test Material 2	California Gulch Fe/Mn PbO	110	9	1	5
8	Test Material 2	California Gulch Fe/Mn PbO	110	18	2	5
9	Test Material 2	California Gulch Fe/Mn PbO	110	54	6	5
10	Reference Material	Lead Acetate (IV)	–	–	0	5

Phase II Experiment 8

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control (IV)	–	–	0	3
2	Reference Material	Lead Acetate (IV)	–	–	0	5
3	Reference Material	Lead Acetate (IV)	–	–	0	5
4	Reference Material	Lead Acetate (IV)	–	–	0	5
5	None	Control (oral)	–	–	0	5
6	Reference Material	Lead Acetate (oral)	–	–	0	5
7	Reference Material	Lead Acetate (oral)	–	–	0	5
8	Test Material 1	California Gulch AV Slag	1050	2	2	5
9	Test Material 1	California Gulch AV Slag	1050	7	7	5
10	Test Material 1	California Gulch AV Slag	1050	21	22	5

Phase II Experiment 9

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	Reference Material	Lead Acetate (IV)	–	–	0	7
2	None	Control	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Reference Material	Lead Acetate (oral)	–	–	0	5
5	Test Material 1	Palmerton Location 2	110	9	1	5
6	Test Material 1	Palmerton Location 2	110	27	3	5
7	Test Material 1	Palmerton Location 2	110	73	8	5
8	Test Material 2	Palmerton Location 4	134	15	2	5
9	Test Material 2	Palmerton Location 4	134	37	5	5
10	Test Material 2	Palmerton Location 4	134	104	14	5

Phase II Experiment 11

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	5
2	Reference Material	Lead Acetate (oral)	–	–	0	5
3	Reference Material	Lead Acetate (oral)	–	–	0	5
4	Reference Material	Lead Acetate (oral)	–	–	0	5
5	Test Material 1	Murray Smelter Soil	310	23	7	5
6	Test Material 1	Murray Smelter Soil	310	71	22	5
7	Test Material 1	Murray Smelter Soil	310	210	65	5
8	Test Material 2	NIST Paint	*	*	*	5
9	Test Material 2	NIST Paint	*	*	*	5
10	Test Material 2	NIST Paint	*	*	*	5

* Sample not evaluated for arsenic RBA

Appendix B2: Phase II Pilot Study Designs

Phase II Pilot 1 (Experiment 10)

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	Reference Material	Sodium Arsenate (IV)	–	–	5	5
2	Reference Material	Sodium Arsenate*	–	–	50	5
3	Reference Material	Sodium Arsenate*	–	–	50	5
4	None	Control	–	–	0	4
5	Reference Material	Sodium Arsenate (oral)	–	–	5	4
6	Reference Material	Sodium Arsenate (oral)	–	–	20	4
7	Reference Material	Sodium Arsenate (oral)	–	–	50	4
8	Test Material 1	California Gulch AV Slag	1050	19	20	4
9	Test Material 1	California Gulch AV Slag	1050	48	50	4
10	Test Material 1	California Gulch AV Slag	1050	114	125	4

* Used to measure time-course of arsenic depuration in blood

Phase II Pilot 2 (Experiment 15)

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	3
2	Reference Material	Sodium Arsenate (IV)	–	–	20	5
3	Reference Material	Sodium Arsenate (IV)	–	–	50	5
4	Reference Material	Sodium Arsenate (gavage)	–	–	20	4
5	Reference Material	Sodium Arsenate (gavage)	–	–	50	4
6	Reference Material	Sodium Arsenate (oral)	–	–	20	4
7	Reference Material	Sodium Arsenate (oral)	–	–	50	4
8	Test Material 1	Clark Fork Tailings	181	110	20	4
9	Test Material 1	Clark Fork Tailings	181	276	50	4

Appendix B3: Phase III Study Designs

Phase III Experiment 1

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	3
2	Reference Material	Sodium Arsenate (oral)	–	–	50	4
3	Reference Material	Sodium Arsenate (oral)	–	–	125	4
4	Test Material 1	VBI70 TM1	312	160	50	4
5	Test Material 1	VBI70 TM1	312	400	125	4
6	Test Material 2	VBI70 TM2	983	51	50	4
7	Test Material 2	VBI70 TM2	983	127	125	4
8	Test Material 3	VBI70 TM3	390	128	50	4
9	Test Material 3	VBI70 TM3	390	321	125	4

Phase III Experiment 2

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	3
2	Reference Material	Sodium Arsenate (oral)	–	–	50	4
3	Reference Material	Sodium Arsenate (oral)	–	–	125	4
4	Test Material 4	VBI70 TM4	813	62	50	4
5	Test Material 4	VBI70 TM4	813	156	125	4
6	Test Material 5	VBI70 TM5	368	136	50	4
7	Test Material 5	VBI70 TM5	368	340	125	4
8	Test Material 6	VBI70 TM6	516	97	50	4
9	Test Material 6	VBI70 TM6	516	242	125	4

Phase III Experiment 3

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	3
2	Reference Material	Sodium Arsenate (oral)	–	–	25	4
3	Reference Material	Sodium Arsenate (oral)	–	–	50	4
4	Reference Material	Sodium Arsenate (oral)	–	–	75	4
5	Test Material 1	Butte TM1	234	107	25	4
6	Test Material 1	Butte TM1	234	214	50	4
7	Test Material 1	Butte TM1	234	321	75	4
8	Test Material 2	Butte TM2	367	68	25	4
9	Test Material 2	Butte TM2	367	136	50	4
10	Test Material 2	Butte TM2	367	204	75	4

Phase III Experiment 4

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/day)	Number of Animals
1	None	Control	–	–	0	3
2	Reference Material	Sodium Arsenate (oral)	–	–	300	4
3	Reference Material	Sodium Arsenate (oral)	–	–	600	4
4	Reference Material	Sodium Arsenate (oral)	–	–	900	4
5	Test Material 1	Aberjona River TM1	676	444	300	4
6	Test Material 1	Aberjona River TM1	676	888	600	4
7	Test Material 1	Aberjona River TM1	676	1332	900	4
8	Test Material 2	Aberjona River TM2	313	958	300	4
9	Test Material 2	Aberjona River TM2	313	1917	600	4
10	Test Material 2	Aberjona River TM2	313	2875	900	4

Phase III Experiment 5

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	3
2	Reference Material	Sodium Arsenate (oral)	–	–	25	5
3	Reference Material	Sodium Arsenate (oral)	–	–	50	5
4	Test Material 1	El Paso TM1	74	541	40	5
5	Test Material 1	El Paso TM1	74	1081	80	5
6	Test Material 1	El Paso TM1	74	2162	160	5
7	Test Material 2	El Paso TM2	73	548	40	5
8	Test Material 2	El Paso TM2	73	1096	80	5
9	Test Material 2	El Paso TM2	73	2192	160	5

Phase III Experiment 6

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	5
2	Reference Material	Sodium Arsenate (oral)	–	–	30	5
3	Reference Material	Sodium Arsenate (oral)	–	–	60	5
4	Test Material 1	ACC Utility Pole Soil	320	188	60	5
5	Test Material 1	ACC Utility Pole Soil	320	375	120	5

Phase III Experiment 7

Group	Dose Material	Description	Test Material Arsenic Concentration (ppm)	Test Material Dose (mg soil/kg-day)	Nominal Arsenic Dose (µg/kg-day)	Number of Animals
1	None	Control	–	–	0	5
2	Reference Material	Sodium Arsenate (oral)	–	–	30	5
3	Reference Material	Sodium Arsenate (oral)	–	–	60	5
4	Test Material 1	ACC Dislodgeable Arsenic	3500	9	30	5
5	Test Material 1	ACC Dislodgeable Arsenic	3500	17	60	5
6	Test Material 1	ACC Dislodgeable Arsenic	3500	34	120	5

APPENDIX C

TEST MATERIAL CHARACTERIZATION

Metal Content of Test Materials

Test Material Description			Concentration (ppm)																					
Phase	**Experiment**	**Sample**	**Al**	**Sb**	**As**	**Ba**	**Be**	**Cd**	**Ca**	**Cr**	**Co**	**Cu**	**Fe**	**Pb**	**Mg**	**Mn**	**Hg**	**Ni**	**K**	**Se**	**Ag**	**Na**	**Tl**	**V**	**Zn**
II	2	Bingham Creek Channel Soil	10,100	18.70	149	152	0.73	8.7	8,500	17.9	7.9	1,720	22,500	6,330	5,970	376	–	15.1	4,150	<17	17.2	314	<17	22.0	–
	4	Jasper County High Lead Mill	–	–	16.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		Murray Smelter Slag	9,370	55.7	695	2,140	0.86	30.9	89,600	34.0	45.4	2,100	170,000	11,700	11,200	2,640	1.00	16.7	2,430	43.90	18.3	836	12.60	73.6	49,500
	5	Aspen Berm	5,070	5.2	66.9	1,640	1.30	41.9	37,200	7.7	17.1	145	33,700	14,200	14,300	2,220	0.77	29.8	1,090	2.00	92.3	249	1.80	11.5	6,580
		Aspen Residential	8,440	11.40	16.7	1,030	0.82	47.4	17,300	10.4	11.1	52	23,000	3,870	6,890	934	0.23	21.9	2,140	0.38	18.9	114	0.27	16.0	4,110
	6	Butte Soil	7,540	10.60	234	134	0.56	42.2	15,700	6.9	9.2	838	48,500	8,530	2,950	12,800	2.20	8.0	3,560	0.27	40.5	530	1.80	27.0	12,100
		Midvale Slag	10,500	71.9	591	637	0.58	24.5	93,200	142.0	33.0	1,330	202,000	8,170	6,180	1,640	0.74	.31U	4,250	39.70	.11U	7,910	8.10	10.1U	33,300
	7	California Gulch Phase I Residential Soil	8,670	1.8	203	605	0.60	59.9	20,100	9.1	2.0	657	68,120	7,510	9,521	7,090	1.26	5.6	1,500	1.90	43.0	6,560	<0.5	33.7	13,738
		California Gulch Fe/Mn PbO	11,900	6.00	110	266	1.00	38.5	3,930	7.5	6.9	165	27,500	4,320	2,520	1,190	4.90	7.5	1,770	0.80	16.7	279	3.70	17.9	2,650
	8	California Gulch AV Slag	20,800	57.2	1,050	2,430	1.20	12.8	117,000	43.1	53.8	2,080	207,000	10,600	6,360	6,910	0.11	7.1	7,390	61.30	21.2	4,080	1.80	37.2	67,300
	9	Palmerton Location 2	7,750	6.00	110	6,850	1.40	195.0	1,160	30.3	18.8	462	25,900	3,230	725	6,320	1.70	15.0	515	11.80	9.5	667	1.90	53.1	6,500
		Palmerton Location 4	7,850	7.40	134.0	1,090	2.00	319.0	2,480	26.6	17.4	350	26,700	2,150	684	9,230	1.10	26.8	512	6.90	5.1	2,100	0.85	49.8	19,100
	11	Murray Smelter Soil	6,520	20.0	310	584	0.48b	23.8	69,000	16.4	11.5	856	38,700	3,200	15,000	863	0.52	10.4	2,040	6.80	11.1	532.0b	4.80	28.3	10,400
	15	Clark Fork Tailings	–	–	181	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1	VBI70 TM1	8,440	2.0	312	163	0.60	6.8	5,095	40.4	5.6	30	12,800	733	2,770	328	0.73	9.4	2,600	1.00	0.7	200	<1	22.3	374
		VBI70 TM2	9,255	6.00	983	275	0.80	8.8	7,285	20.5	6.1	47	14,800	824	2,885	429	1.34	10.3	2,750	2.00	<0.5	200	<1	24.8	449
		VBI70 TM3	8,915	2.50	390	208	0.65	2.6	4,475	19.6	5.5	32	12,750	236	2,510	424	0.71	8.3	2,350	<1	<0.5	200	<1	22.7	342
		VBI70 TM4	7,495	3.00	813	324	0.60	5.0	5,895	19.7	5.0	53	15,250	541	2,315	525	0.68	9.6	1,750	2.00	<0.5	200	<1	23.7	661
	2	VBI70 TM5	7,305	2.00	368	106	0.45	1.1	2,920	16.7	4.7	19	12,100	157	2,085	207	0.36	8.2	2,000	<1	<0.5	<100	<1	21.5	120
		VBI70 TM6	5,740	4.5	516	136	0.50	5.0	3,010	12.9	4.5	32	11,800	264	1,755	275	0.34	7.3	2,200	<1	<0.5	<100	<1	18.9	261
		Butte TM1	14,100	1.20	234	165	0.88	42.3	15,700	16.7	5.5	837	55,800	7,980	3,510	13,200	2.30	6.3	4,170	1.00	37.0	3,950	10.10	55.8	12,500
III	3																								
		Butte TM2	14,067	3.37	367	211	0.78	7.7	3,363	25.6	8.7	3,130	39,800	492	3,950	732	0.42	12.0	3,680	0.91	8.1	777	0.85	48.7	2,457
		Aberjona River TM1	15,000	4.30	676	75	0.96	15.0	9,100	680.0	32.0	840	73,000	410	2,000	510	2.90	28.0	690	5.80	0.9	ND	1.70	49.0	3,300
	4																								
		Aberjona River TM2	11,000	3.70	312.8	98	0.62	16.0	10,000	620.0	46.0	540	38,000	350	2,600	610	1.10	35.0	770	3.80	1.1	<500	4.40	43.0	4,500
		El Paso TM1	–	–	74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5																								
		El Paso TM2	–	–	73	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	ACC Utility Pole Soil	–	–	320	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Metal Content of Test Materials

Test Material Description			Concentration (ppm)																					
Phase	**Experi-ment**	**Sample**	**Al**	**Sb**	**As**	**Ba**	**Be**	**Cd**	**Ca**	**Cr**	**Co**	**Cu**	**Fe**	**Pb**	**Mg**	**Mn**	**Hg**	**Ni**	**K**	**Se**	**Ag**	**Na**	**Tl**	**V**	**Zn**
	7	ACC Dislodgeable Arsenic	–	–	74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

All samples were analyzed by ICP/AES in accord with EPA Method 200.7.
– = Not measured

PHASE II EXPERIMENT 2 – BINGHAM CREEK CHANNEL SOIL ARSENIC ASSOCIATION SUMMARY STATISTICS

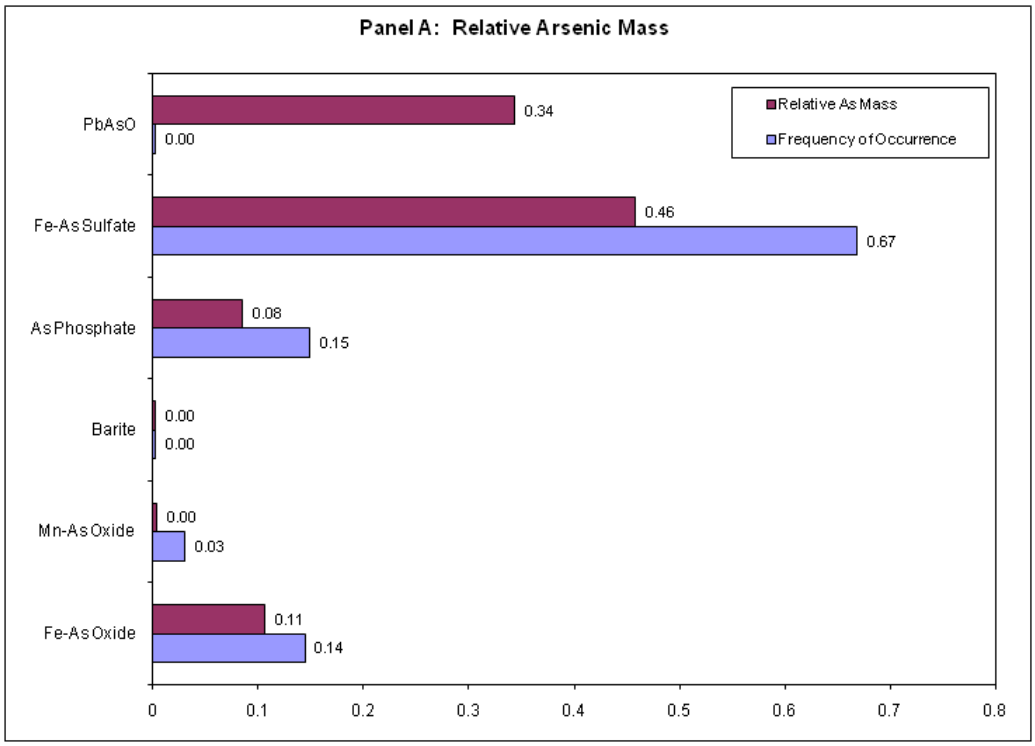
ARSENIC ASSOCIATION SUMMARY STATISTICS

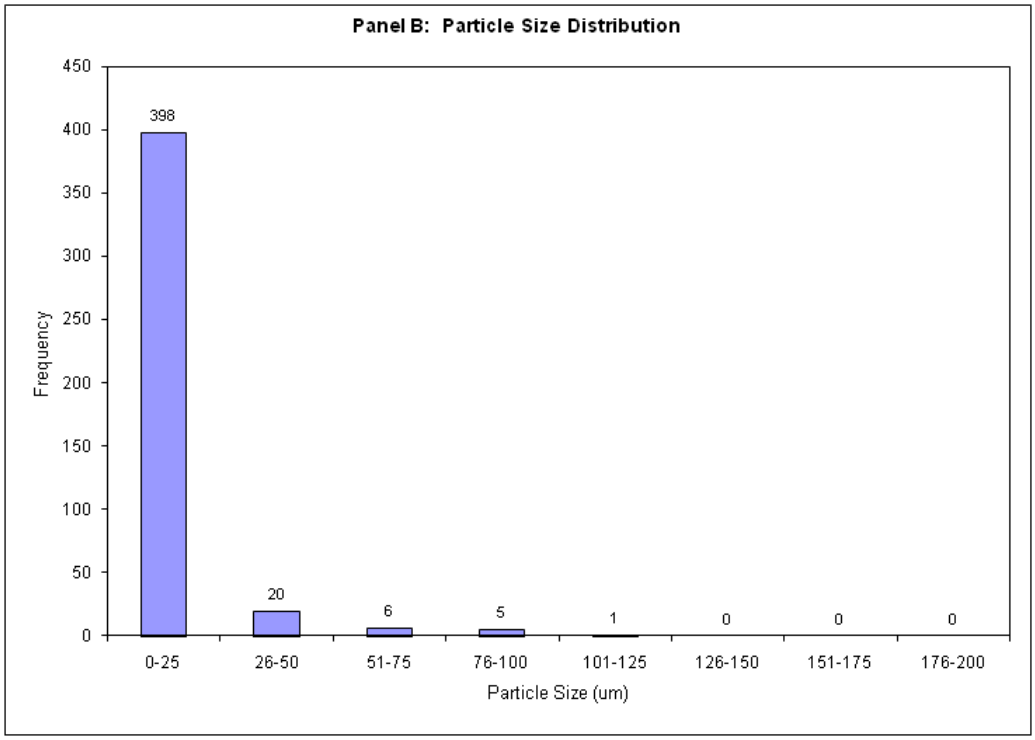
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	30	30	7.0%	7.0%	484	484	16	14.45%	14.45%	10.70%	10.70%
MnAs Oxide	5	5	1.2%	1.2%	103	103	21	3.08%	3.08%	0.39%	0.39%
Other	1	1	0.2%	0.2%	10	10	10	0.30%	0.30%	0.25%	0.25%
As Phosphate	42	42	9.8%	9.8%	501	501	12	14.96%	14.96%	8.50%	8.50%
Fe & Zn Sulfates	349	349	81.2%	81.2%	2240	2240	6	66.89%	66.89%	45.82%	45.82%
PbAs Oxide	3	3	0.7%	0.7%	11	11	4	0.33%	0.33%	34.34%	34.34%
Total	430	430	100%	100%	3349	3349	8	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	70.9%	70.9%	20.9%	20.9%
6–10	14.2%	14.2%	35.0%	35.0%
11–20	6.3%	6.3%	8.4%	8.4%
21–50	5.8%	5.8%	16.9%	16.9%
51–100	2.6%	2.6%	16.7%	16.7%
101–150	0.2%	0.2%	2.2%	2.2%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE II EXPERIMENT 2 – BINGHAM CREEK CHANNEL SOIL SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 4 – MURRAY SMELTER SLAG

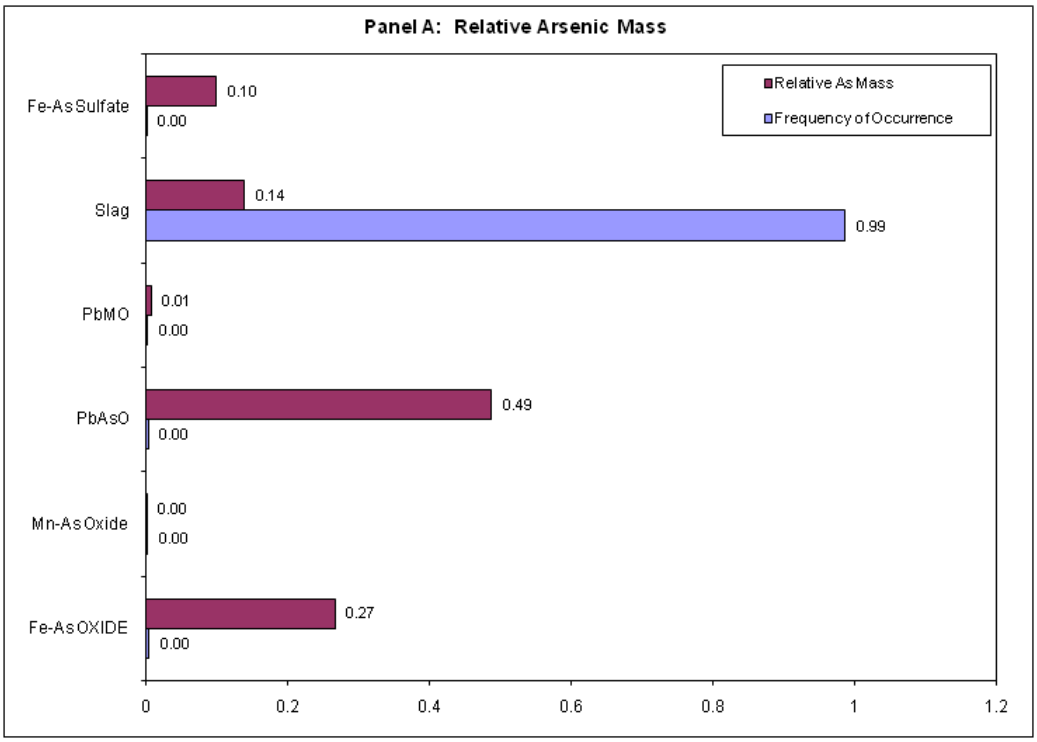
ARSENIC ASSOCIATION SUMMARY STATISTICS

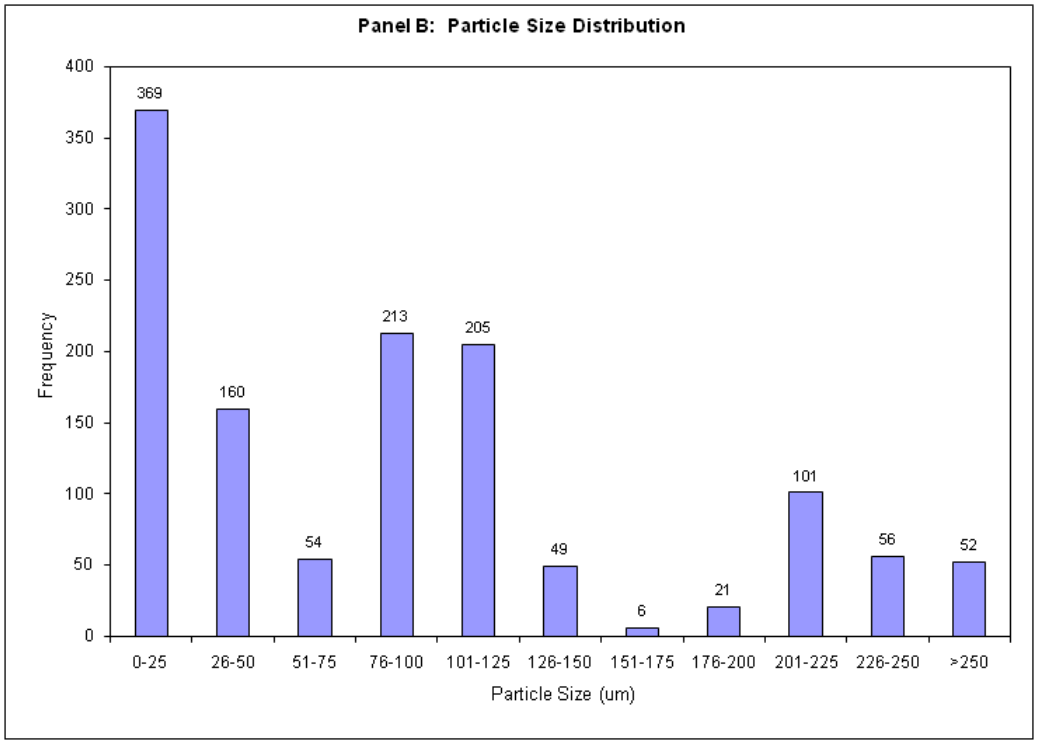
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	15	15	1.40%	1.40%	358	358	43	0.46%	0.46%	26.64%	26.64%
MnAs Oxide	7	7	0.60%	0.60%	218	218	31	0.28%	0.28%	0.04%	0.04%
PbAs Oxide	39	31	3.50%	2.80%	240	215	6	0.31%	0.28%	48.77%	43.69%
Other	1045	1040	94.30%	93.90%	76246	76223	92	98.80%	98.77%	14.64%	14.53%
Fe & Zn Sulfates	2	2	0.20%	0.20%	110	110	55	0.14%	0.14%	9.90%	9.90%
Total	1108	1095	100%	99%	77172	77124	70	100%	100%	100%	95%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	14.3%	13.3%	13.5%	10.0%
6–10	14.8%	14.6%	15.5%	13.8%
11–20	4.2%	4.2%	6.7%	6.7%
21–50	14.5%	14.5%	20.1%	20.1%
51–100	24.1%	24.1%	35.8%	35.8%
101–150	22.9%	22.9%	6.2%	6.2%
151–200	2.4%	2.4%	0.9%	0.9%
201–250	2.6%	2.6%	1.1%	1.1%
>250	0.2%	0.2%	0.1%	0.1%
Total	100%	99%	100%	95%

PHASE II EXPERIMENT 4 – MURRAY SMELTER SLAG SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 6 – BUTTE SOIL*

ARSENIC ASSOCIATION SUMMARY STATISTICS

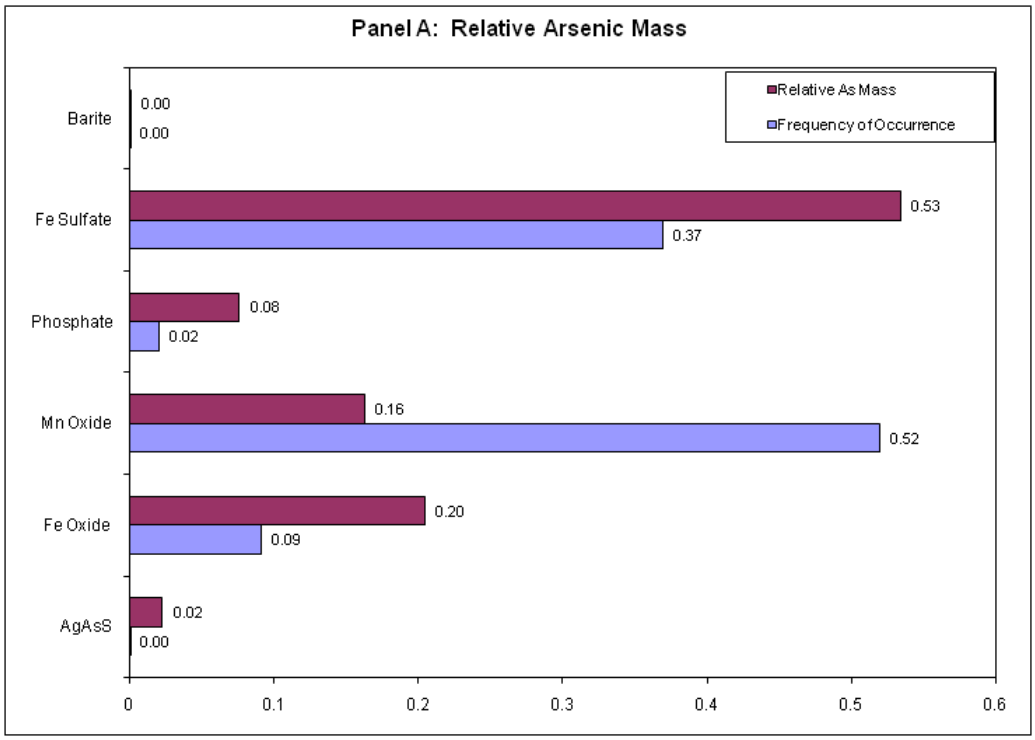
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
Sulfosalts	1	1	0.20%	0.20%	7	7	7	0.02%	0.02%	2.27%	2.27%
FeAs Oxide	59	49	9.30%	7.70%	3017	2545	96	9.11%	7.69%	20.42%	18.22%
MnAs Oxide	240	229	37.70%	36.00%	17202	16457	173	51.95%	49.70%	16.27%	15.72%
As Phosphate	16	5	2.50%	0.80%	665	30	58	2.01%	0.09%	7.61%	0.19%
Fe & Zn Sulfates	319	300	50.20%	47.20%	12216	11562	77	36.89%	34.92%	53.36%	50.71%
Other	1	1	0.20%	0.20%	5	5	5	0.02%	0.02%	0.07%	0.07%
Total	636	585	100%	92%	33112	30606	52	100%	92%	100%	87%

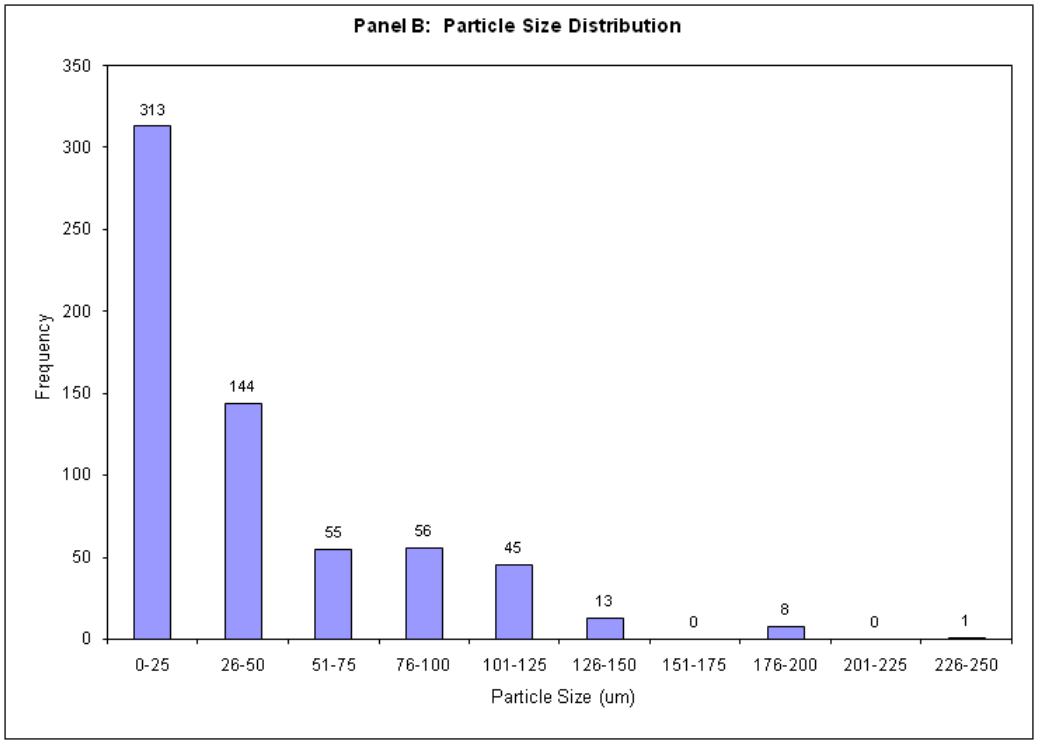
PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	20.8%	19.3%	1.4%	1.2%
6–10	9.1%	8.3%	4.2%	4.0%
11–20	15.7%	14.6%	5.5%	4.8%
21–50	26.3%	24.8%	18.5%	16.9%
51–100	17.5%	15.4%	30.0%	25.6%
101–150	9.1%	8.2%	24.5%	21.4%
151–200	1.3%	0.9%	6.5%	4.1%
201–250	0.2%	0.2%	1.0%	1.0%
>250	0.2%	0.2%	8.3%	8.3%
Total	100%	92%	100%	87%

*Same as Phase III Experiment 3, Butte TM1

PHASE II EXPERIMENT 6 – BUTTE SOIL*
SPECIATION AND PARTICLE SIZE DATA





*Same as Phase III Experiment 3, Butte TM1

PHASE II EXPERIMENT 6 – MIDVALE SLAG

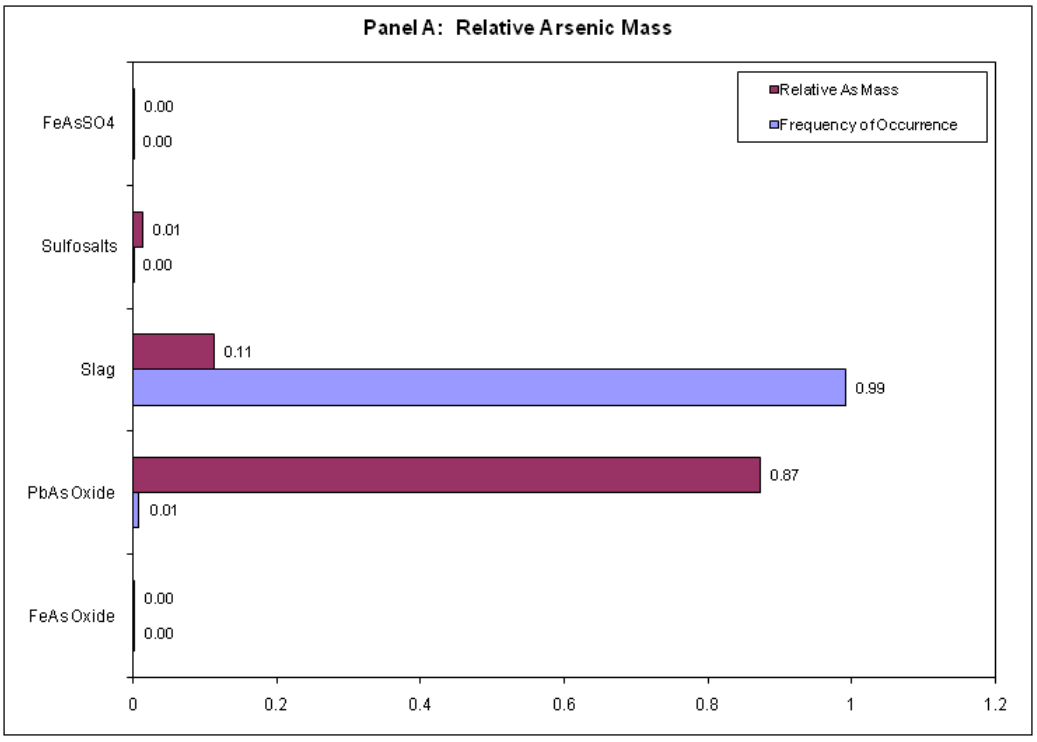
ARSENIC ASSOCIATION SUMMARY STATISTICS

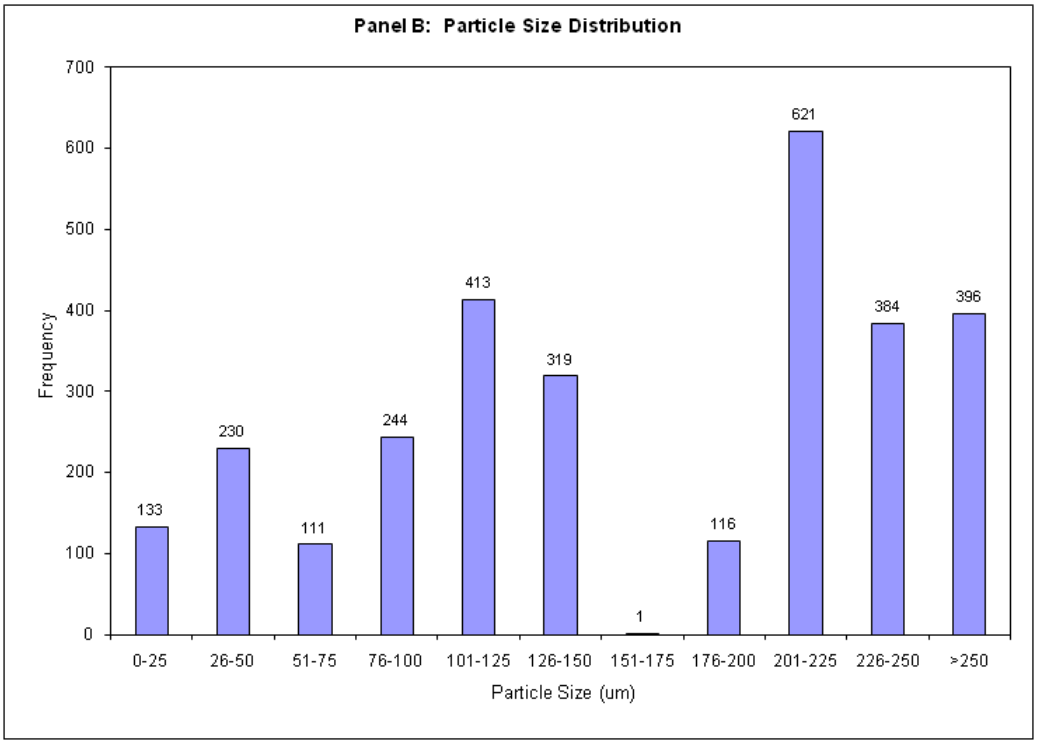
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	4	4	0.20%	0.20%	102	102	26	0.04%	0.04%	0.15%	0.15%
PbAs Oxide	119	41	6.40%	2.20%	1886	1402	16	0.83%	0.62%	87.20%	64.82%
Other	1721	1721	93.20%	93.20%	225380	225380	131	99.09%	99.09%	11.25%	11.25%
Sulfosalts	1	1	0.10%	0.10%	50	50	50	0.02%	0.02%	1.36%	1.36%
Fe & Zn Sulfates	2	2	0.10%	0.10%	30	30	15	0.01%	0.01%	0.04%	0.04%
Total	1847	1769	100%	96%	227448	226964	123	100%	100%	100%	78%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	3.1%	0.2%	6.5%	0.8%
6–10	1.2%	0.6%	5.2%	0.8%
11–20	2.2%	1.6%	13.0%	6.2%
21–50	13.2%	12.9%	37.4%	31.8%
51–100	19.2%	19.2%	28.8%	28.8%
101–150	39.6%	39.6%	4.8%	4.8%
151–200	6.3%	6.3%	1.1%	1.1%
201–250	14.5%	14.5%	3.0%	3.0%
>250	0.7%	0.7%	0.3%	0.3%
Total	100%	96%	100%	78%

PHASE II EXPERIMENT 6 – MIDVALE SLAG
SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 7 – CALIFORNIA GULCH PHASE I RESIDENTIAL SOIL

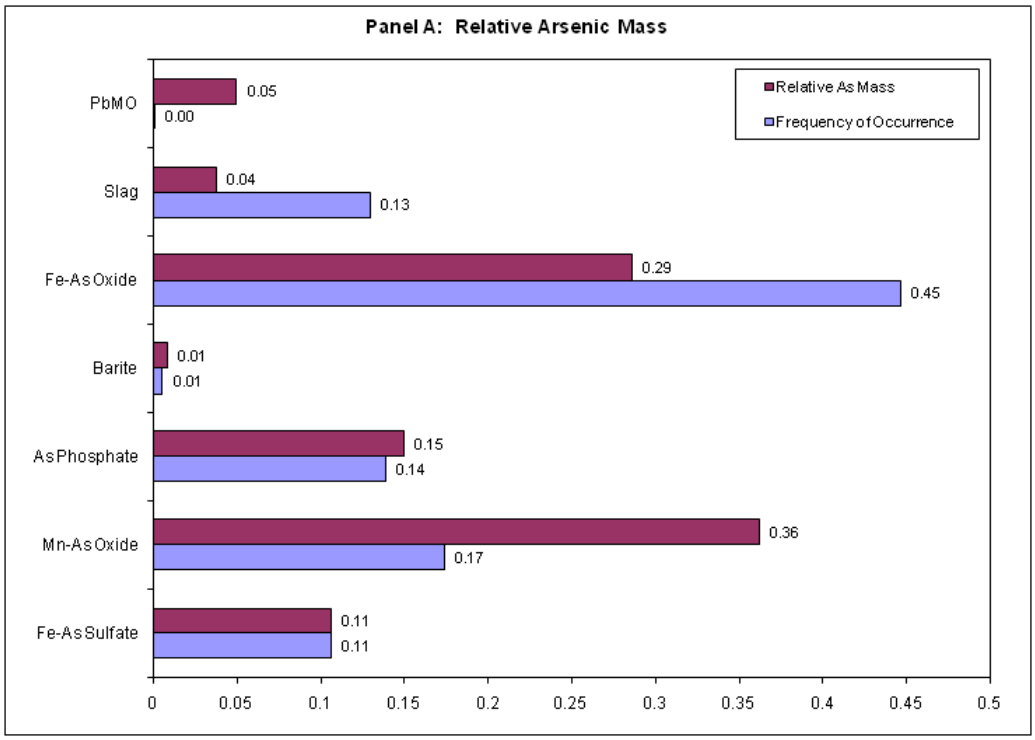
ARSENIC ASSOCIATION SUMMARY STATISTICS

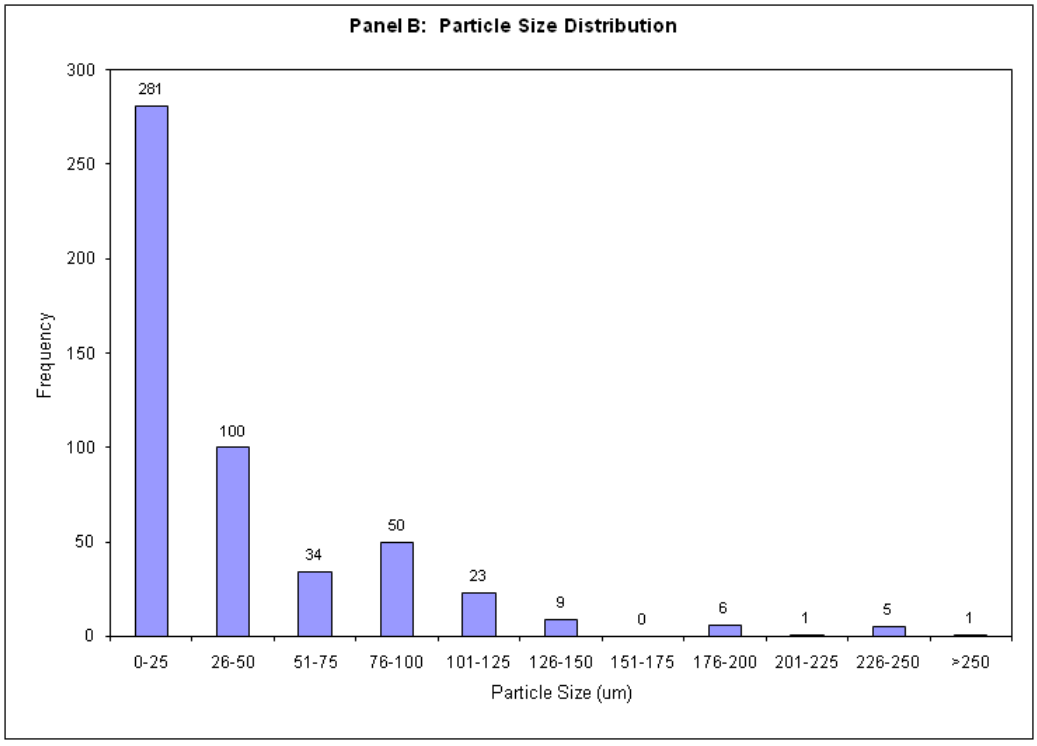
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
Fe & Zn Sulfates	70	65	13.70%	12.70%	2178	2173	31	10.58%	10.56%	10.65%	10.62%
MnAs Oxide	83	83	16.30%	16.30%	3583	3583	43	17.40%	17.40%	36.20%	36.20%
As Phosphate	150	114	29.40%	22.40%	2856	2714	19	13.87%	13.18%	14.98%	14.24%
FeAs Oxide	176	166	34.50%	32.50%	9190	9180	52	44.64%	44.59%	28.57%	28.54%
Other	31	23	6.10%	4.50%	2780	2760	143	13.50%	13.41%	9.59%	4.55%
Total	510	451	100.00%	88.40%	20587	20410	40	100.00%	99.14%	100.00%	94.16%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	21.8%	11.0%	6.4%	1.0%
6–10	16.5%	15.9%	4.3%	4.1%
11–20	14.3%	14.3%	7.6%	7.6%
21–50	22.2%	22.2%	22.8%	22.8%
51–100	16.5%	16.3%	33.0%	32.7%
101–150	6.3%	6.3%	17.6%	17.6%
151–200	1.2%	1.2%	2.7%	2.7%
201–250	1.2%	1.2%	4.7%	4.7%
>250	0.2%	0.2%	0.9%	0.9%
Total	100%	88%	100%	94%

PHASE II EXPERIMENT 7 – CALIFORNIA GULCH PHASE I RESIDENTIAL SOIL SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 7 – CALIFORNIA GULCH Fe/Mn PbO

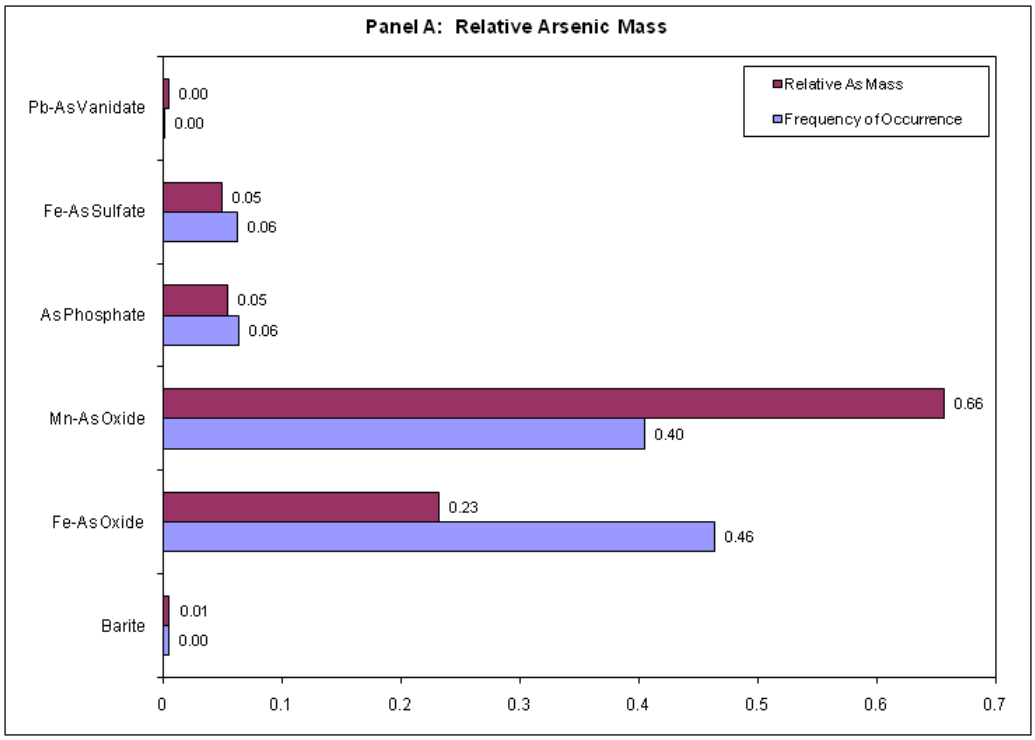
ARSENIC ASSOCIATION SUMMARY STATISTICS

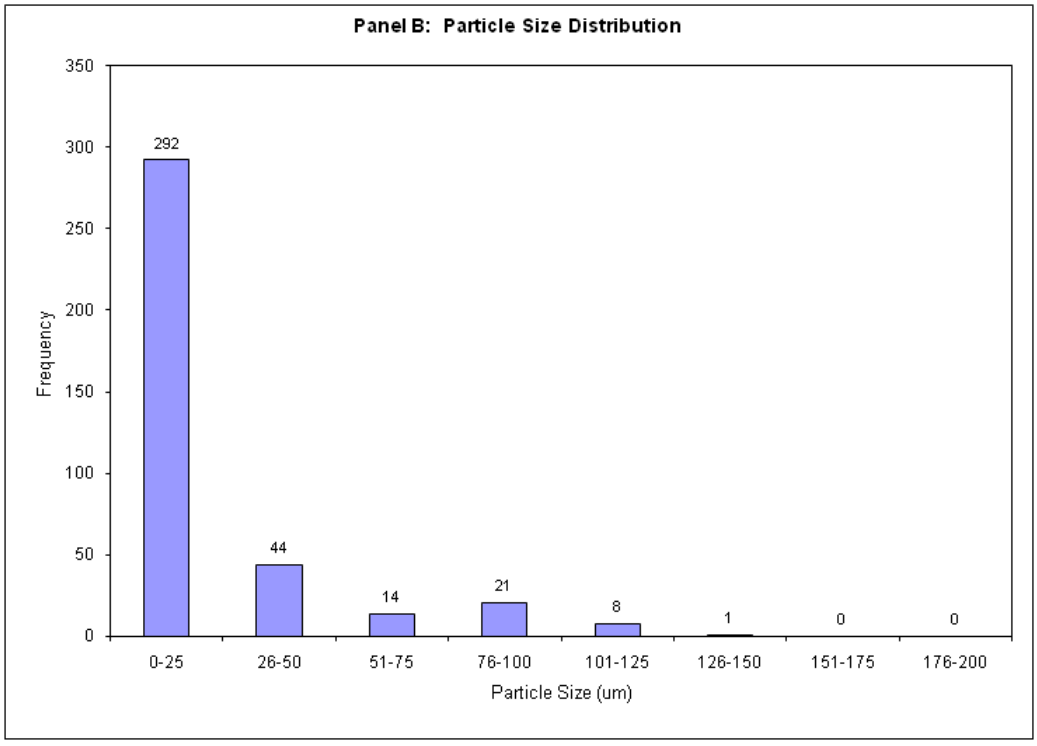
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	186	186	48.90%	48.90%	3692	3692	20	46.38%	46.38%	23.15%	23.15%
MnAs Oxide	71	71	18.70%	18.70%	3222	3222	45	40.47%	40.47%	65.65%	65.65%
As Phosphate	66	64	17.40%	16.80%	507	501	8	6.37%	6.29%	5.36%	5.30%
Fe & Zn Sulfates	48	48	12.60%	12.60%	496	496	10	6.23%	6.23%	4.89%	4.89%
Other	9	3	2.40%	0.80%	44	19	10	0.55%	0.24%	0.94%	0.55%
Total	380	372	100%	98%	7961	7930	21	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	35.0%	33.2%	4.5%	4.2%
6–10	23.9%	23.7%	6.8%	6.7%
11–20	12.6%	12.6%	6.8%	6.8%
21–50	16.8%	16.8%	29.5%	29.5%
51–100	9.2%	9.2%	39.0%	39.0%
101–150	2.4%	2.4%	13.3%	13.3%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	98%	100%	100%

PHASE II EXPERIMENT 7 – CALIFORNIA GULCH Fe/Mn PbO SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 8 – CALIFORNIA GULCH AV SLAG*

ARSENIC ASSOCIATION SUMMARY STATISTICS

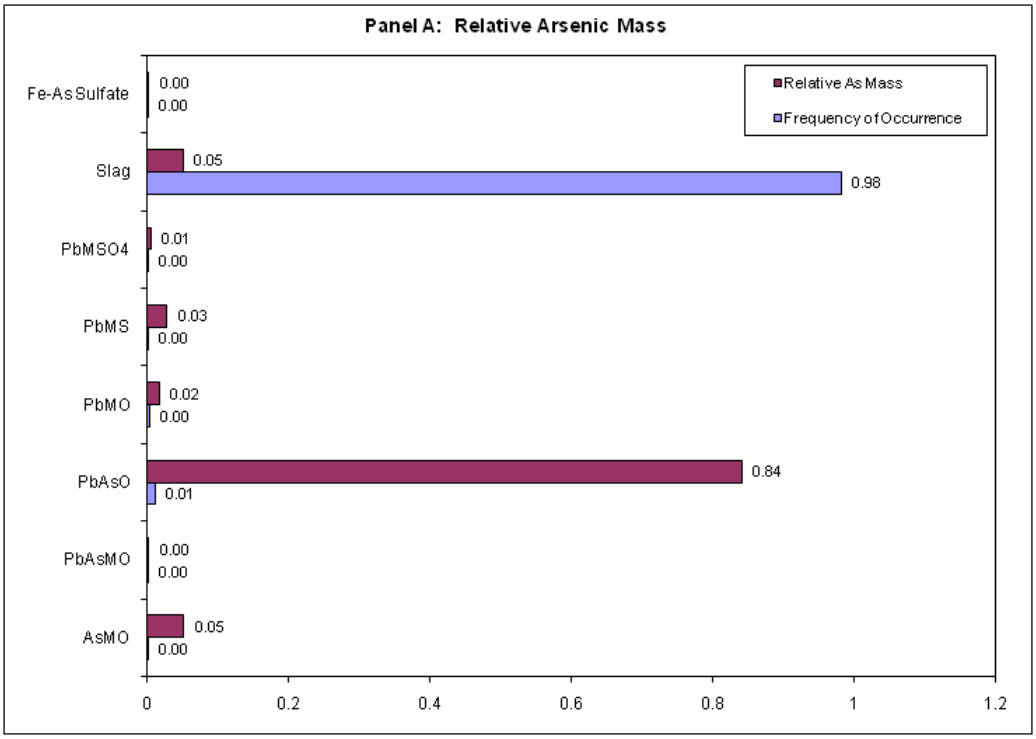
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
PbAs Oxide	214	30	14.50%	2.00%	1763	1211	8	1.14%	0.78%	84.15%	57.80%
Other	1253	1218	85.10%	82.70%	152469	152395	380	98.74%	98.69%	15.60%	15.51%
Fe & Zn Sulfates	5	1	0.30%	0.10%	185	55	37	0.12%	0.04%	0.25%	0.08%
Total	1472	1249	100.00%	84.90%	154417	153661	105	100.00%	99.51%	100.00%	73.39%

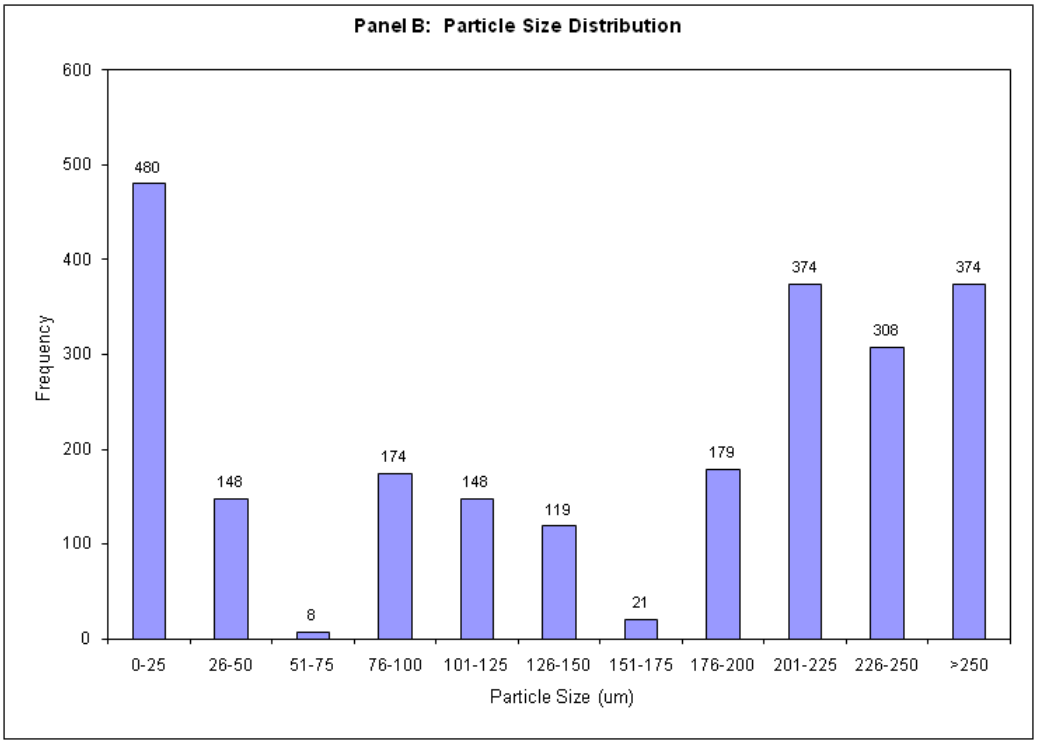
PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	20.7%	7.3%	14.0%	0.2%
6–10	9.2%	7.8%	9.9%	2.0%
11–20	1.7%	1.6%	4.8%	3.4%
21–50	11.1%	10.8%	38.0%	34.5%
51–100	12.4%	12.4%	16.9%	16.9%
101–150	18.1%	18.1%	13.3%	13.3%
151–200	13.6%	13.6%	1.3%	1.3%
201–250	7.3%	7.3%	0.8%	0.8%
>250	5.9%	5.9%	0.9%	0.9%
Total	100%	85%	100%	73%

*Same as Phase II Pilot 1 (Experiment 10)

PHASE II EXPERIMENT 8 – CALIFORNIA GULCH AV SLAG*
SPECIATION AND PARTICLE SIZE DATA





*Same as Phase II Pilot 1 (Experiment 10)

PHASE II EXPERIMENT 9 – PALMERTON LOCATION 2

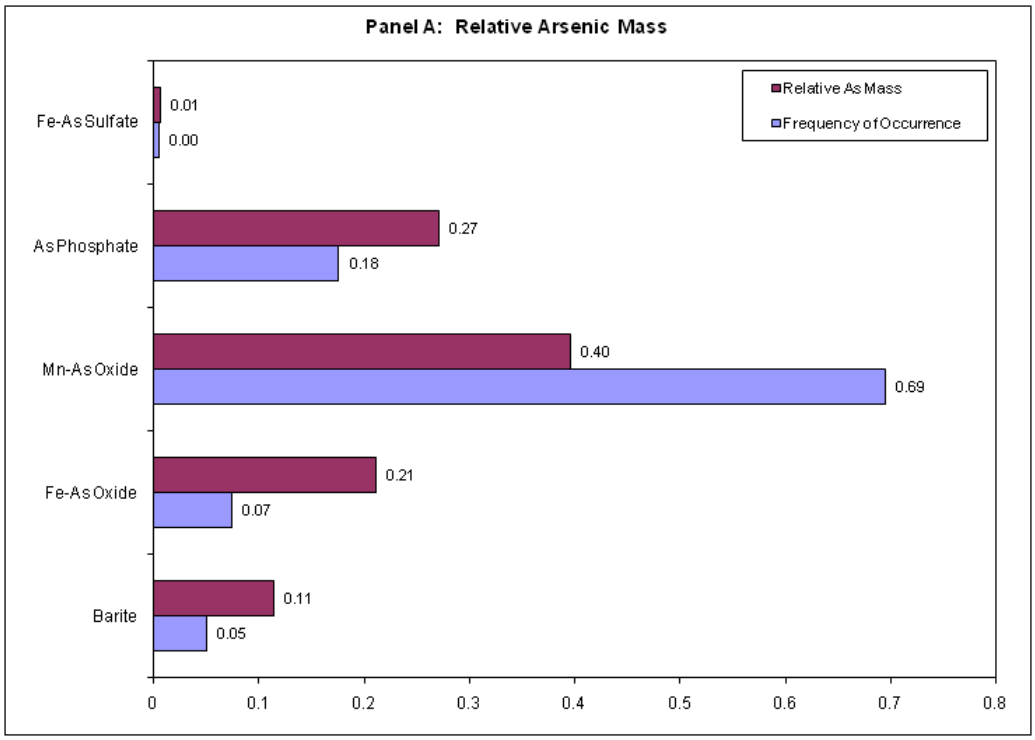
ARSENIC ASSOCIATION SUMMARY STATISTICS

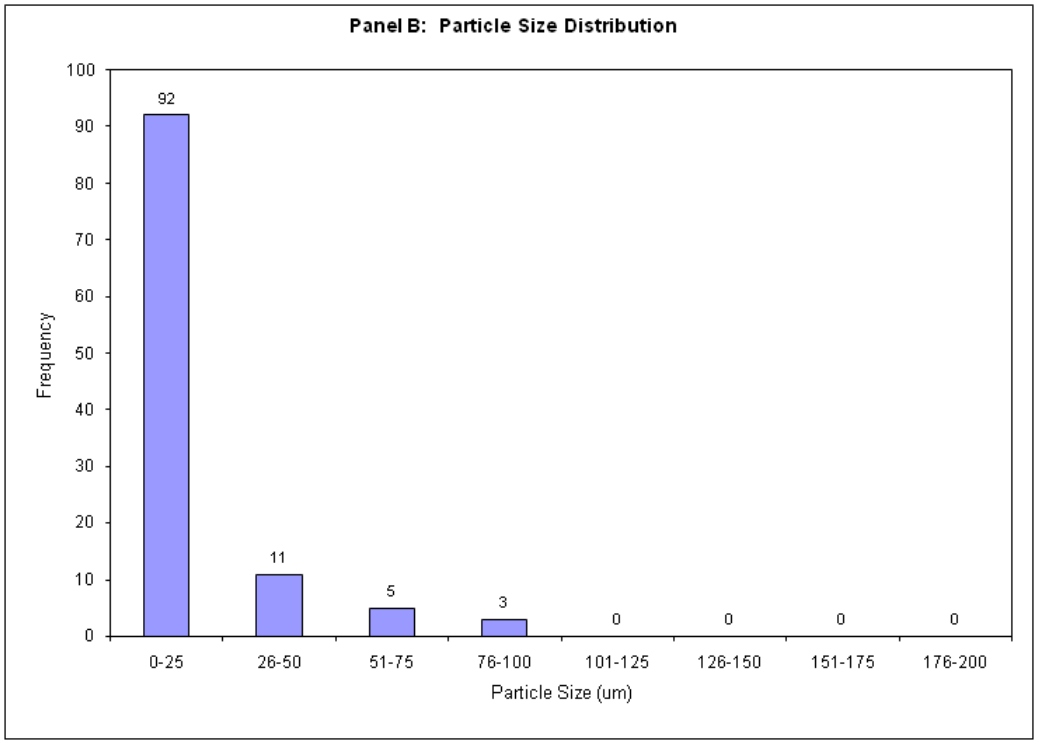
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
Other	11	11	9.90%	9.90%	85	85	8	5.00%	5.00%	11.42%	11.42%
FeAs Oxide	15	15	13.50%	13.50%	127	127	8	7.47%	7.47%	21.16%	21.16%
MnAs Oxide	68	68	61.30%	61.30%	1180	1180	17	69.45%	69.45%	39.63%	39.63%
As Phosphate	16	16	14.40%	14.40%	299	299	19	17.60%	17.60%	27.11%	27.11%
Fe & Zn Sulfates	1	1	0.90%	0.90%	8	8	8	0.47%	0.47%	0.68%	0.68%
Total	111	111	100%	100%	1699	1699	15	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	39.6%	39.6%	10.1%	10.1%
6–10	26.1%	26.1%	19.6%	19.6%
11–20	11.7%	11.7%	15.1%	15.1%
21–50	15.3%	15.3%	36.5%	36.5%
51–100	7.2%	7.2%	18.6%	18.6%
101–150	0.0%	0.0%	0.0%	0.0%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE II EXPERIMENT 9 – PALMERTON LOCATION 2
SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 9 – PALMERTON LOCATION 4

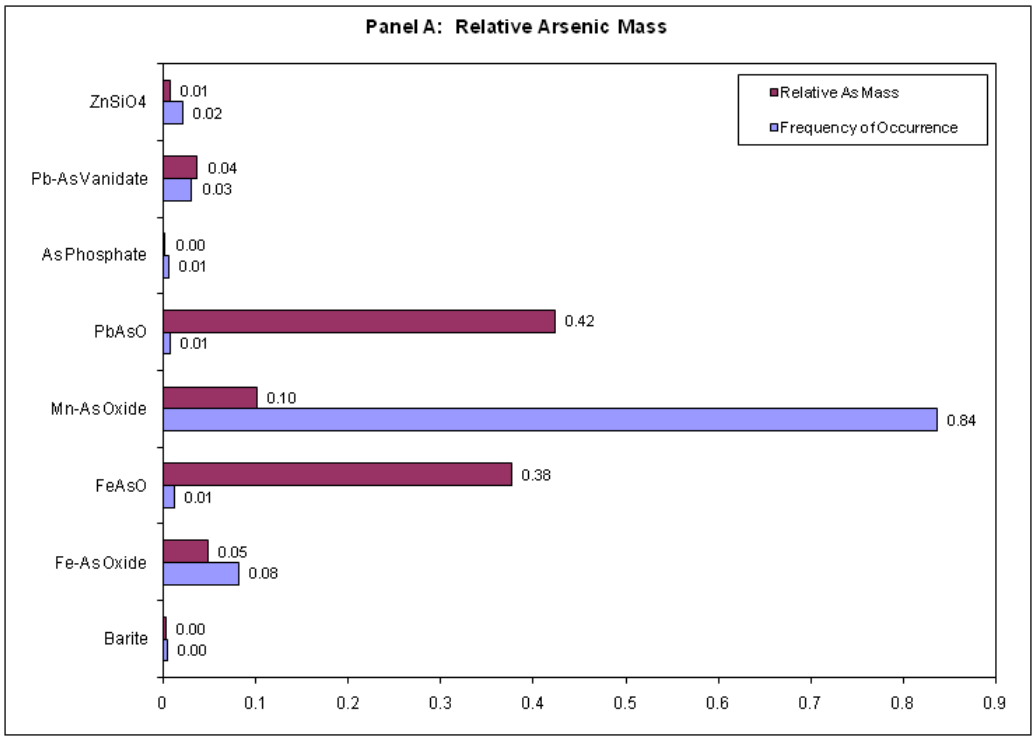
ARSENIC ASSOCIATION SUMMARY STATISTICS

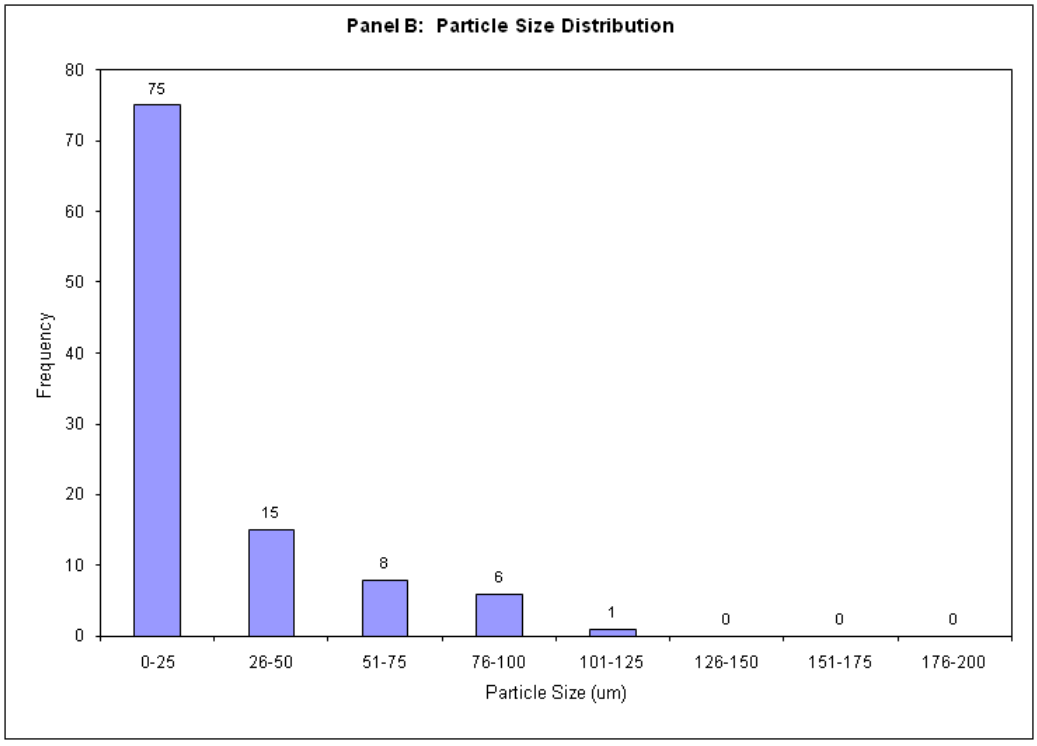
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	12	12	11.40%	11.40%	197	197	16	8.10%	8.10%	4.87%	4.87%
FeAsO	2	2	1.90%	1.90%	30	30	15	1.23%	1.23%	37.71%	37.71%
MnAs Oxide	65	65	61.90%	61.90%	2035	2035	31	83.64%	83.64%	10.15%	10.15%
PbAs Oxide	17	0	16.20%	0.00%	17	0	1	0.70%	0.00%	42.39%	0.00%
As Phosphate	1	1	1.00%	1.00%	15	15	15	0.62%	0.62%	0.20%	0.20%
Other	8	8	7.60%	7.60%	139	139	53	5.71%	5.71%	4.67%	4.67%
Total	105	88	100%	84%	2433	2416	23	100%	99%	100%	58%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	21.0%	4.8%	42.9%	0.6%
6–10	27.6%	27.6%	15.3%	15.3%
11–20	18.1%	18.1%	29.1%	29.1%
21–50	19.0%	19.0%	7.1%	7.1%
51–100	13.3%	13.3%	5.0%	5.0%
101–150	1.0%	1.0%	0.5%	0.5%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	84%	100%	58%

PHASE II EXPERIMENT 9 – PALMERTON LOCATION 4
SPECIATION AND PARTICLE SIZE DATA





PHASE II EXPERIMENT 11 – MURRAY SMELTER SOIL

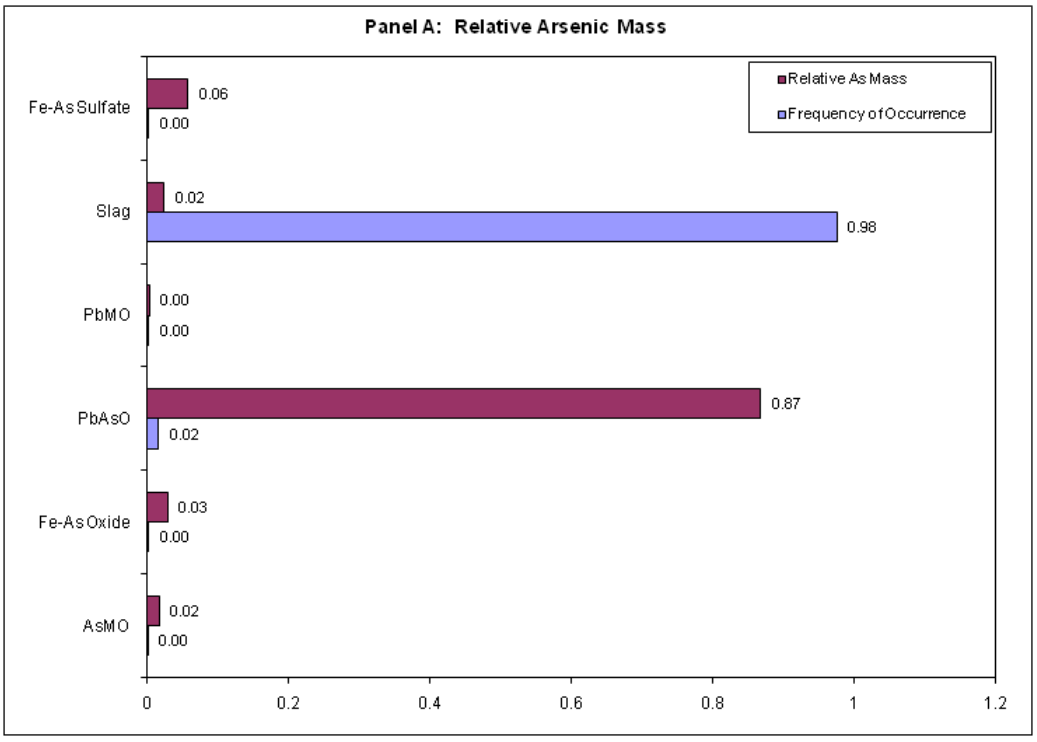
ARSENIC ASSOCIATION SUMMARY STATISTICS

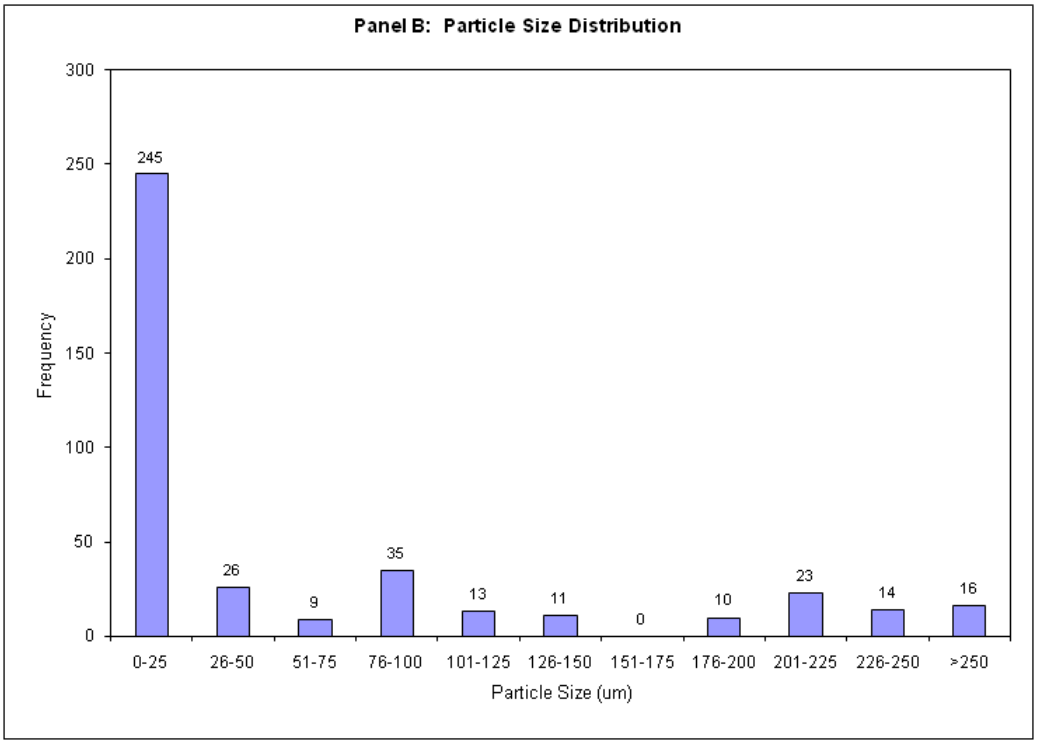
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	4	4	1.10%	1.10%	32	32	8	0.22%	0.22%	2.90%	2.90%
PbAs Oxide	44	16	12.40%	4.50%	232	177	5	1.62%	1.24%	86.77%	66.20%
Other	306	304	86.20%	85.60%	13988	13974	56	97.91%	97.81%	4.53%	4.40%
Fe & Zn Sulfates	1	1	0.30%	0.30%	35	35	35	0.24%	0.24%	5.80%	5.80%
Total	355	325	100%	92%	14287	14218	40	100%	100%	100%	79%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	18.3%	10.1%	31.4%	10.8%
6–10	30.7%	30.4%	9.2%	9.1%
11–20	17.2%	17.2%	21.6%	21.6%
21–50	10.1%	10.1%	15.4%	15.4%
51–100	12.4%	12.4%	21.2%	21.2%
101–150	6.8%	6.8%	0.6%	0.6%
151–200	2.8%	2.8%	0.3%	0.3%
201–250	1.1%	1.1%	0.2%	0.2%
>250	0.6%	0.6%	0.1%	0.1%
Total	100%	92%	100%	79%

PHASE II EXPERIMENT 11 – MURRAY SMELTER SOIL SPECIATION AND PARTICLE SIZE DATA





PHASE II PILOT 2 (EXPERIMENT 15) – CLARK FORK TAILINGS

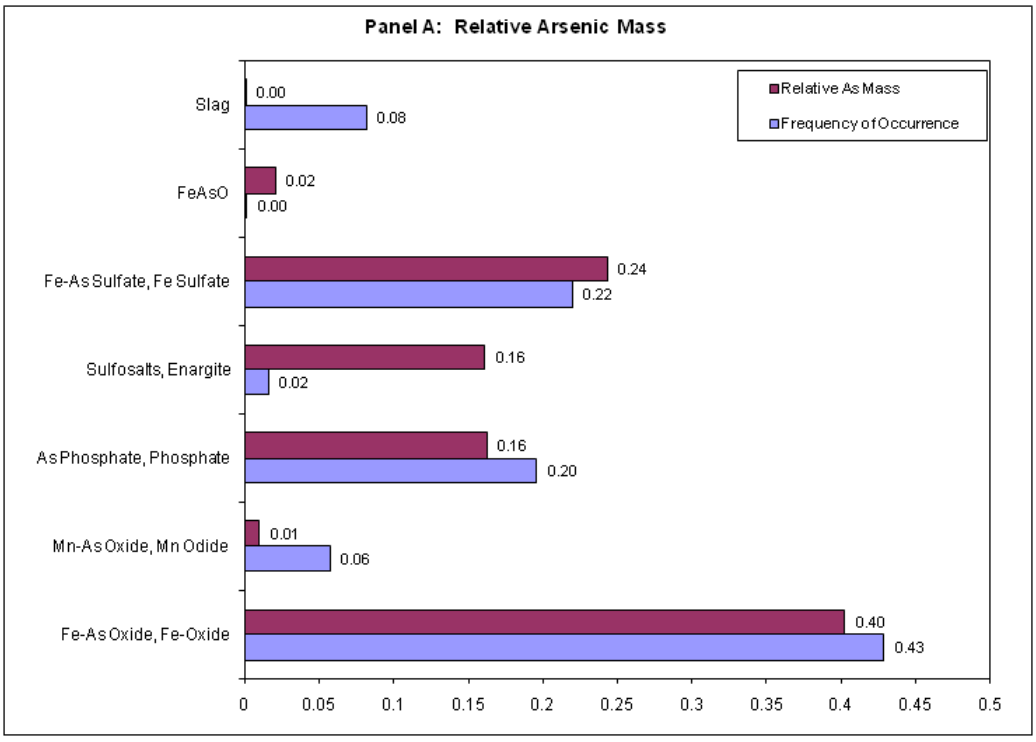
ARSENIC ASSOCIATION SUMMARY STATISTICS

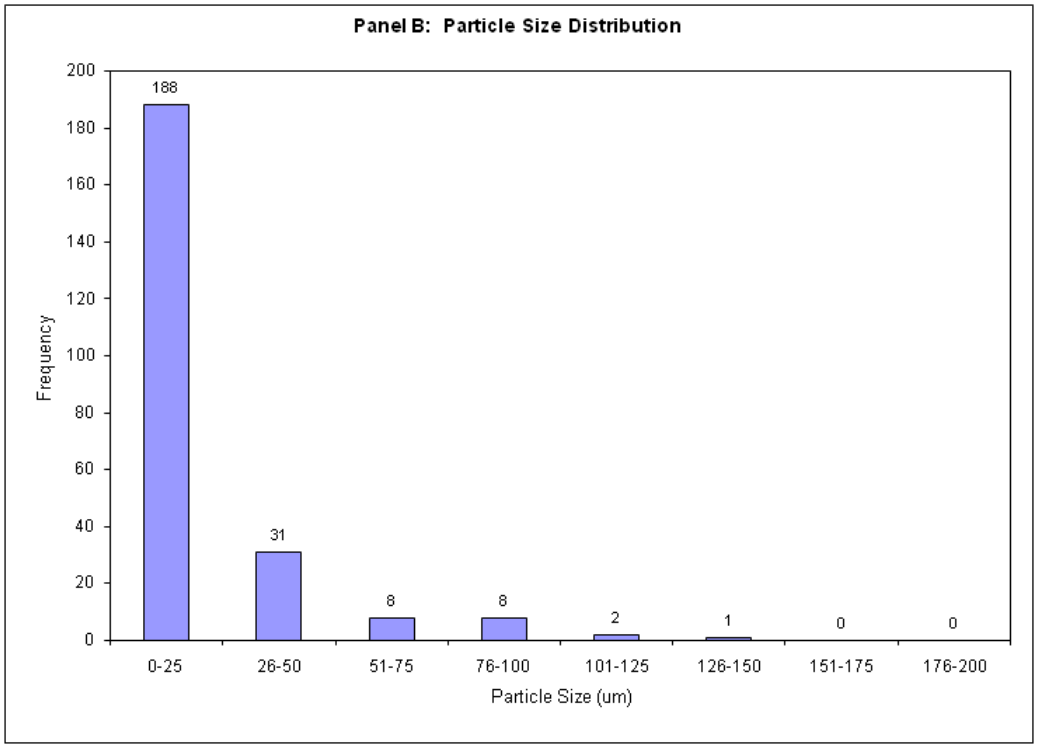
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	79	79	33.20%	33.20%	1913	1913	66	42.87%	42.87%	40.25%	40.25%
MnAs Oxide	9	9	3.80%	3.80%	255	255	119	5.71%	5.71%	0.97%	0.97%
As Phosphate	75	74	31.50%	31.10%	874	866	24	19.59%	19.41%	16.25%	16.11%
Sulfosalts	13	12	5.50%	5.00%	70	55	11	1.57%	1.23%	16.09%	12.69%
Fe & Zn Sulfates	51	51	21.40%	21.40%	981	981	25	21.99%	21.99%	24.32%	24.32%
FeAsO	3	3	1.30%	1.30%	6	6	2	0.13%	0.13%	2.05%	2.05%
Other	8	8	3.40%	3.40%	363	363	45	8.14%	8.14%	0.07%	0.07%
Total	238	236	100%	99%	4462	4439	19	100%	99%	100%	96%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	34.5%	34.5%	12.1%	12.1%
6–10	19.7%	19.3%	9.2%	9.1%
11–20	17.2%	16.8%	20.1%	16.7%
21–50	20.6%	20.6%	33.2%	33.2%
51–100	6.7%	6.7%	20.0%	20.0%
101–150	1.3%	1.3%	5.4%	5.4%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	99%	100%	96%

PHASE II PILOT 2 (EXPERIMENT 15) – CLARK FORK TAILINGS SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 1 – VBI70 TM1

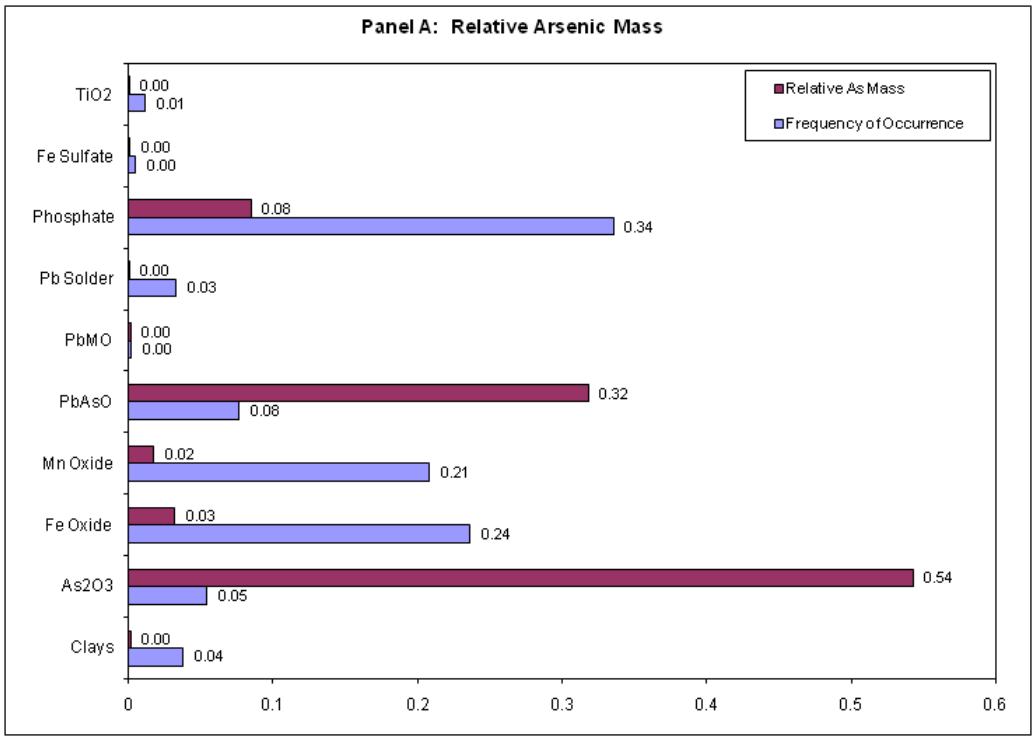
ARSENIC ASSOCIATION SUMMARY STATISTICS

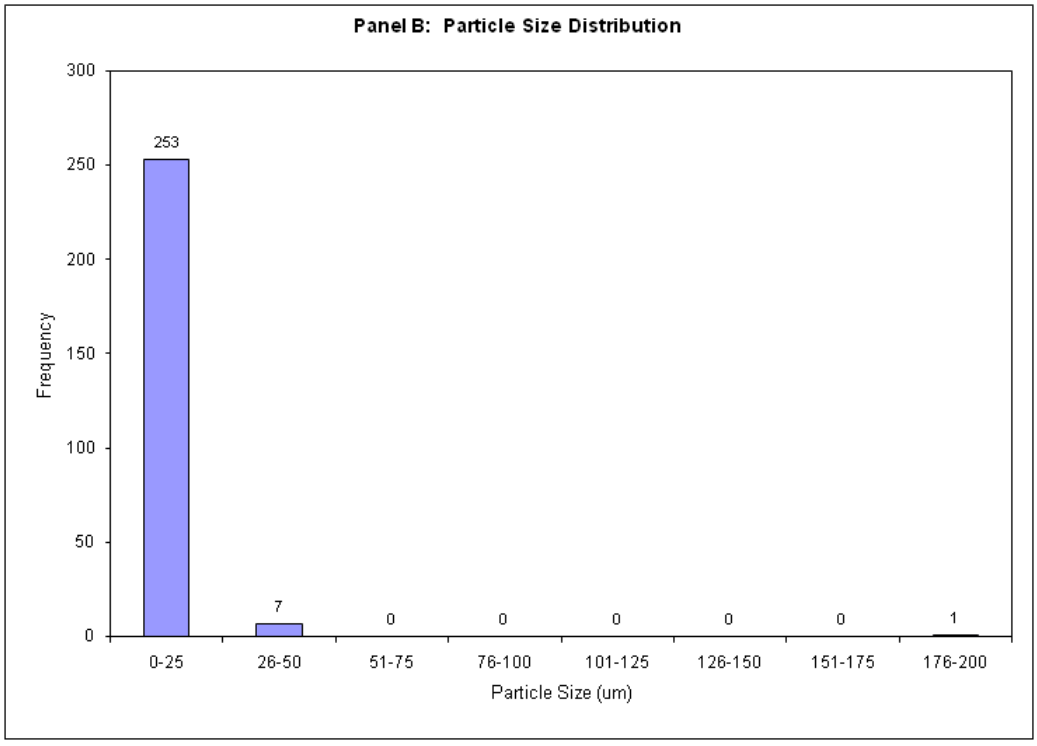
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
As2O3	7	7	2.70%	2.70%	68	68	10	5.41%	5.41%	54.28%	54.28%
FeAs Oxide	25	25	9.60%	9.60%	297	297	12	23.63%	23.63%	3.24%	3.24%
MnAs Oxide	39	39	14.90%	14.90%	262	262	7	20.84%	20.84%	1.77%	1.77%
PbAs Oxide	52	52	19.90%	19.90%	96	96	2	7.64%	7.64%	31.84%	31.84%
As Phosphate	128	128	49.00%	49.00%	422	422	3	33.57%	33.57%	8.48%	8.48%
Fe & Zn Sulfates	1	1	0.40%	0.40%	6	6	6	0.48%	0.48%	0.06%	0.06%
Other	9	9	3.40%	3.40%	106	106	73	8.43%	8.43%	0.33%	0.33%
Total	261	261	100%	100%	1257	1257	5	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	80.8%	80.8%	29.8%	29.8%
6–10	8.8%	8.8%	23.2%	23.2%
11–20	6.5%	6.5%	40.7%	40.7%
21–50	3.4%	3.4%	2.3%	2.3%
51–100	0.0%	0.0%	0.0%	0.0%
101–150	0.0%	0.0%	0.0%	0.0%
151–200	0.4%	0.4%	4.0%	4.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE III EXPERIMENT 1 – VBI70 TM1
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 1 – VBI70 TM2

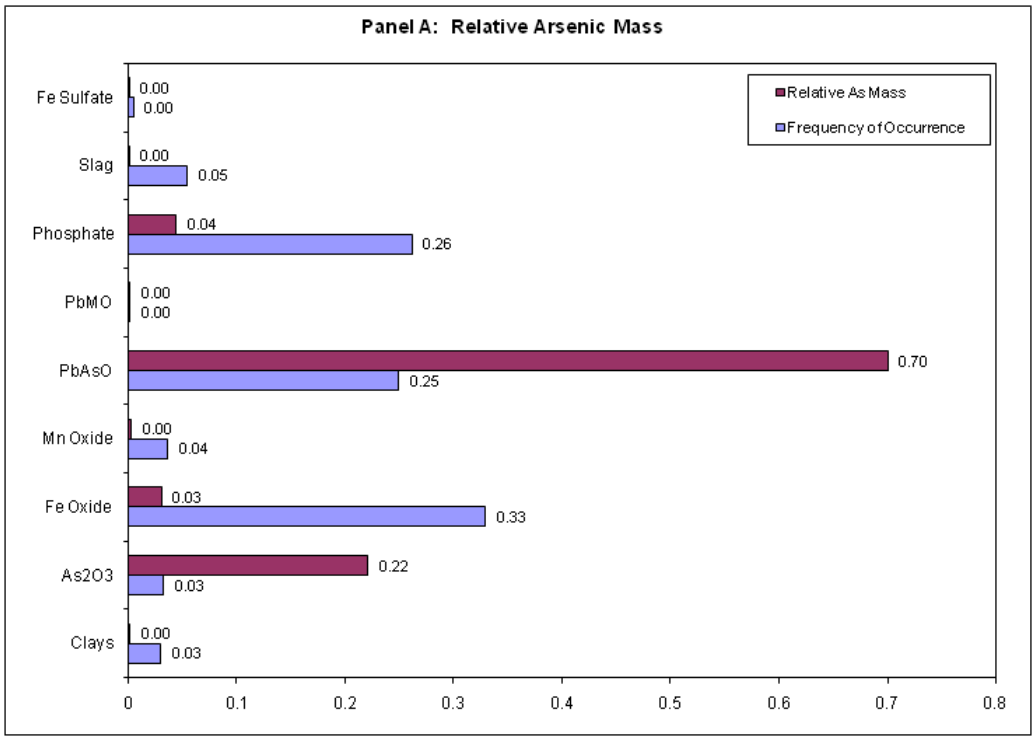
ARSENIC ASSOCIATION SUMMARY STATISTICS

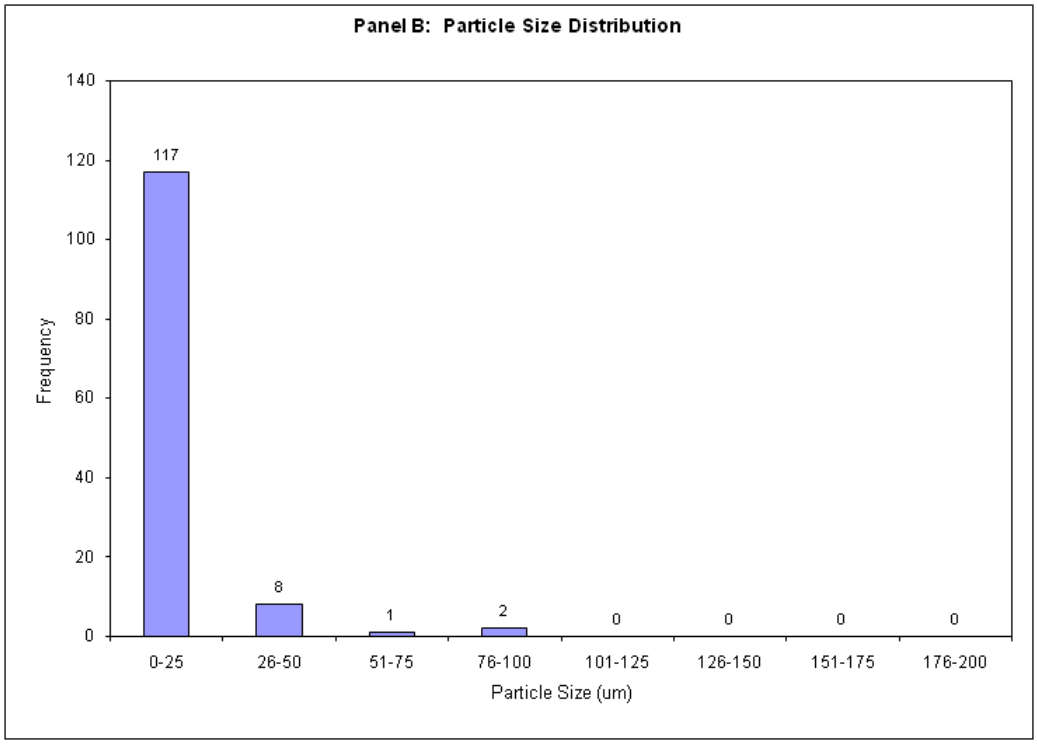
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
As2O3	7	6	5.50%	4.70%	36	28	5	3.27%	2.54%	22.07%	17.16%
FeAs Oxide	24	24	18.80%	18.80%	363	363	15	32.94%	32.94%	3.04%	3.04%
MnAs Oxide	5	5	3.90%	3.90%	40	40	8	3.63%	3.63%	0.21%	0.21%
PbAs Oxide	54	54	42.20%	42.20%	275	275	5	24.95%	24.95%	70.03%	70.03%
As Phosphate	28	28	21.90%	21.90%	288	288	10	26.13%	26.13%	4.45%	4.45%
Other	9	9	7.00%	7.00%	95	95	38	8.62%	8.62%	0.17%	0.17%
Fe & Zn Sulfates	1	1	0.80%	0.80%	5	5	5	0.45%	0.45%	0.04%	0.04%
Total	128	127	100%	99%	1102	1094	9	100%	99%	100%	95%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	58.6%	58.6%	25.7%	25.7%
6–10	20.3%	19.5%	25.6%	20.7%
11–20	10.2%	10.2%	9.1%	9.1%
21–50	8.6%	8.6%	3.2%	3.2%
51–100	2.3%	2.3%	36.4%	36.4%
101–150	0.0%	0.0%	0.0%	0.0%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	99%	100%	95%

PHASE III EXPERIMENT 1 – VBI70 TM2
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 1 – VBI70 TM3

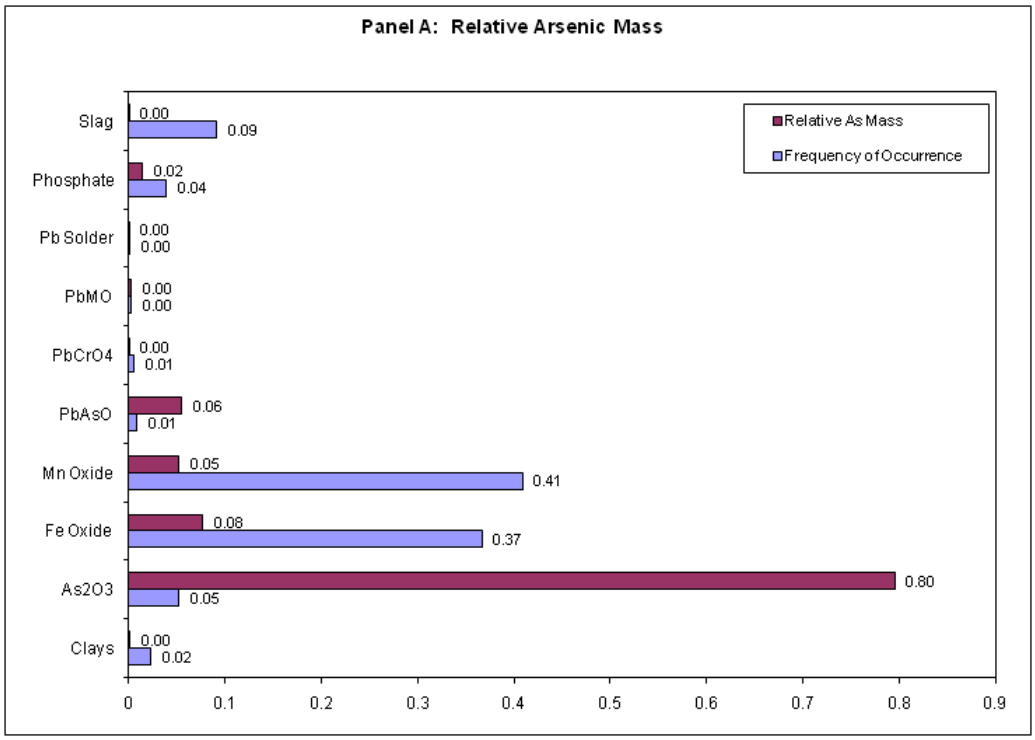
ARSENIC ASSOCIATION SUMMARY STATISTICS

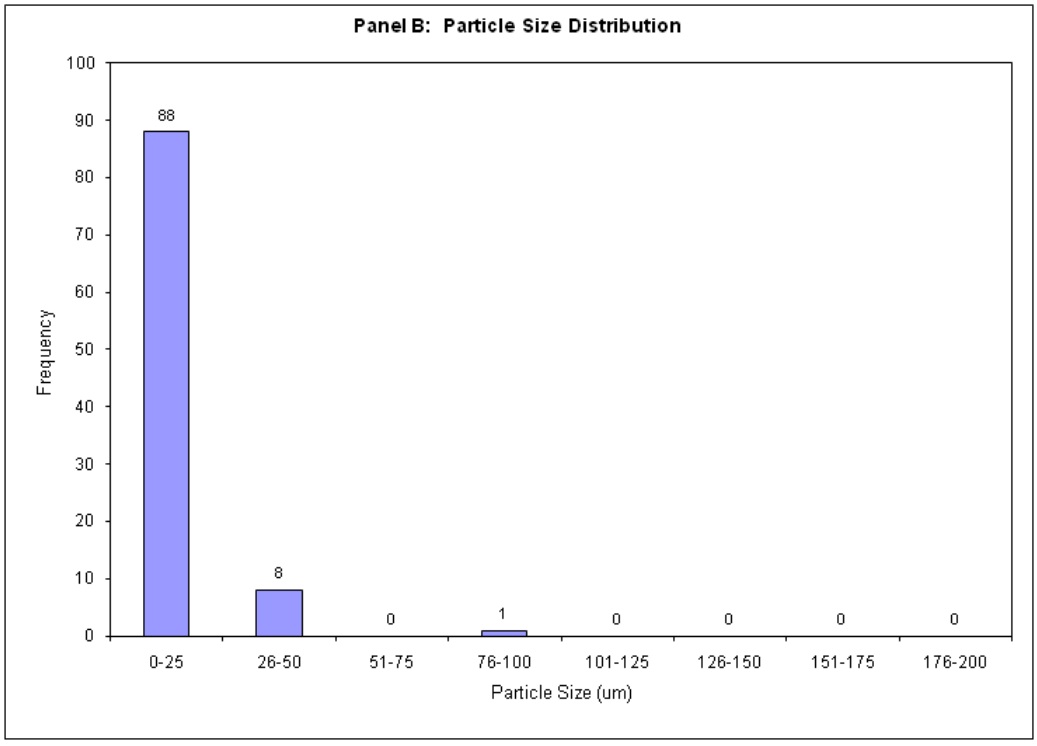
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
As2O3	8	8	8.20%	8.20%	48	48	6	5.19%	5.19%	79.53%	79.53%
FeAs Oxide	28	28	28.90%	28.90%	339	339	12	36.69%	36.69%	7.68%	7.68%
MnAs Oxide	22	22	22.70%	22.70%	378	378	17	40.91%	40.91%	5.29%	5.29%
PbAs Oxide	6	6	6.20%	6.20%	8	8	1	0.87%	0.87%	5.51%	5.51%
As Phosphate	20	20	20.60%	20.60%	36	36	2	3.90%	3.90%	1.50%	1.50%
Other	13	13	13.40%	13.40%	115	115	95	12.45%	12.45%	0.49%	0.49%
Total	97	97	100%	100%	924	924	10	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	49.5%	49.5%	25.5%	25.5%
6–10	20.6%	20.6%	63.9%	63.9%
11–20	17.5%	17.5%	4.6%	4.6%
21–50	11.3%	11.3%	5.9%	5.9%
51–100	1.0%	1.0%	0.0%	0.0%
101–150	0.0%	0.0%	0.0%	0.0%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE III EXPERIMENT 1 – VBI70 TM3
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 2 – VBI70 TM4

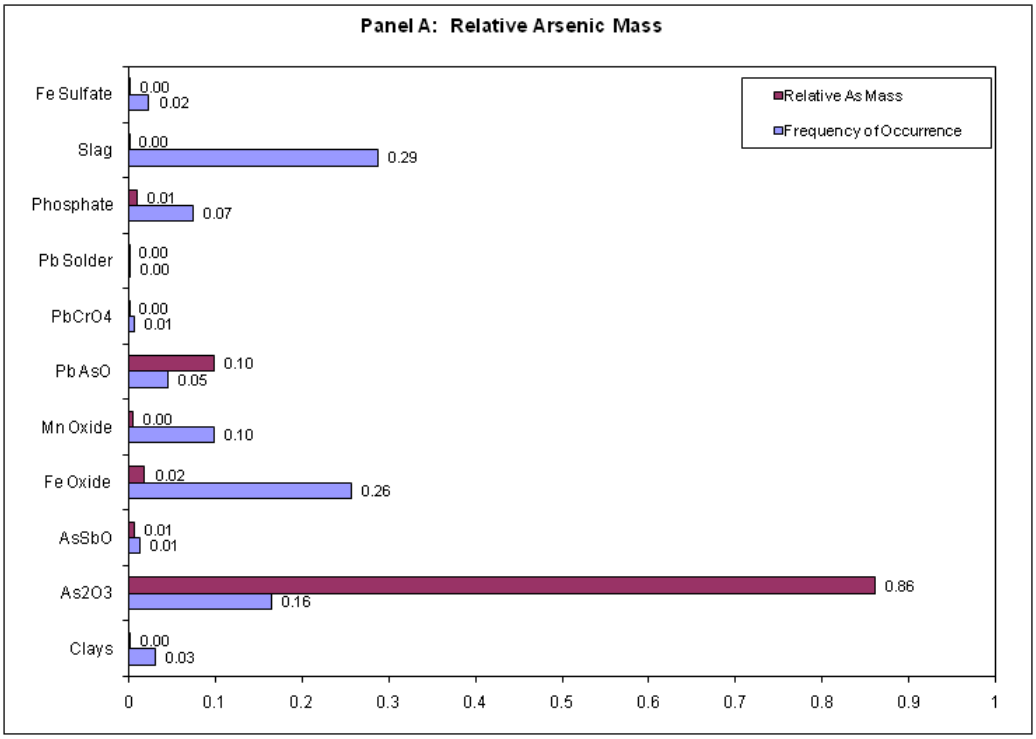
ARSENIC ASSOCIATION SUMMARY STATISTICS

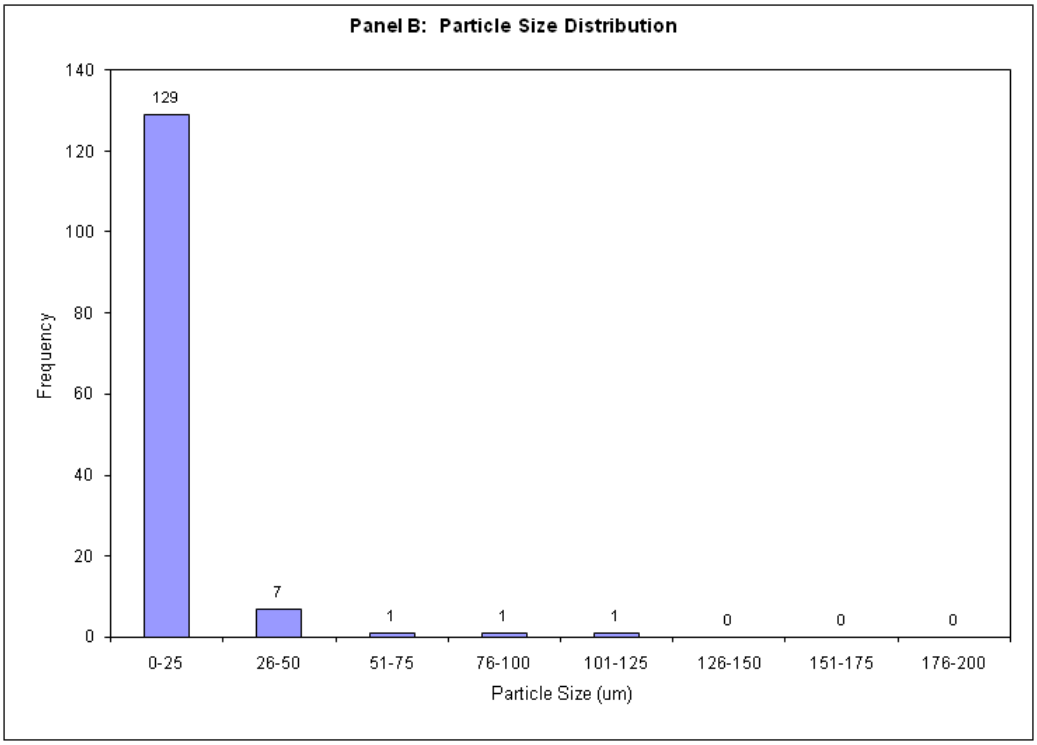
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
As2O3	33	33	23.70%	23.70%	229	229	7	16.47%	16.47%	86.06%	86.06%
FeAs Oxide	40	40	28.80%	28.80%	357	357	9	25.68%	25.68%	1.83%	1.83%
MnAs Oxide	14	14	10.10%	10.10%	136	136	10	9.78%	9.78%	0.43%	0.43%
PbAs Oxide	4	4	2.90%	2.90%	63	63	16	4.53%	4.53%	9.84%	9.84%
As Phosphate	20	20	14.40%	14.40%	103	103	5	7.41%	7.41%	0.97%	0.97%
Fe & Zn Sulfates	6	6	4.30%	4.30%	32	32	5	2.30%	2.30%	0.15%	0.15%
Other	22	22	15.80%	15.80%	470	470	71	33.81%	33.81%	0.71%	0.71%
Total	139	139	100%	100%	1390	1390	10	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	44.6%	44.6%	11.0%	11.0%
6–10	31.7%	31.7%	52.3%	52.3%
11–20	12.9%	12.9%	18.1%	18.1%
21–50	8.6%	8.6%	9.3%	9.3%
51–100	1.4%	1.4%	9.4%	9.4%
101–150	0.7%	0.7%	0.0%	0.0%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE III EXPERIMENT 2 – VBI70 TM4
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 2 – VBI70 TM5

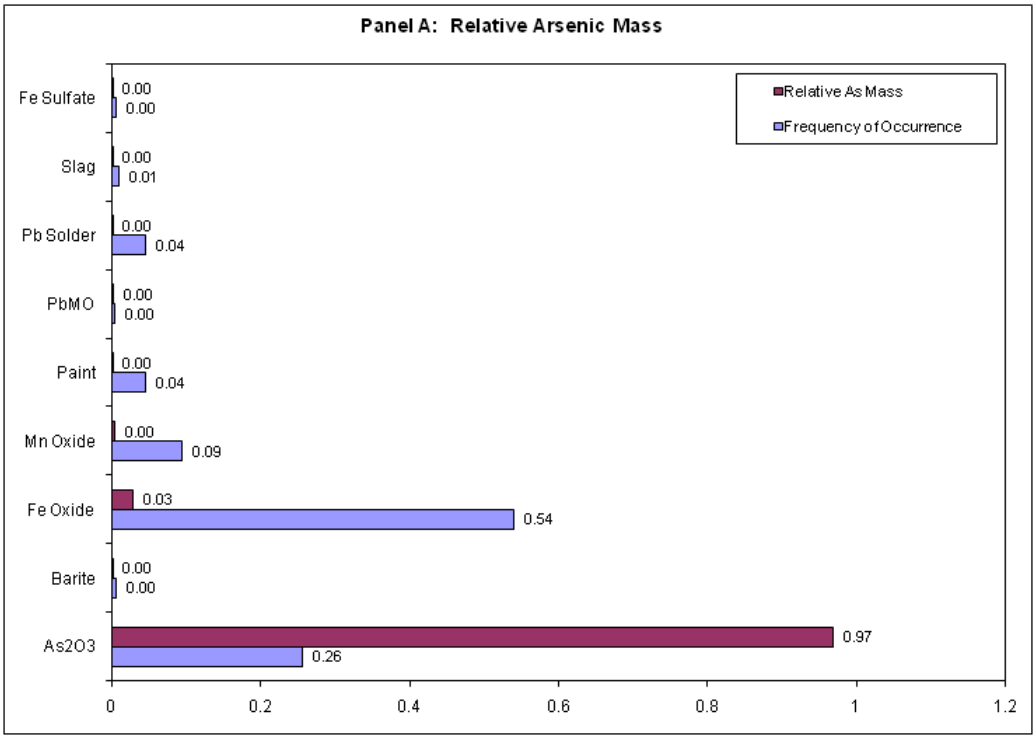
ARSENIC ASSOCIATION SUMMARY STATISTICS

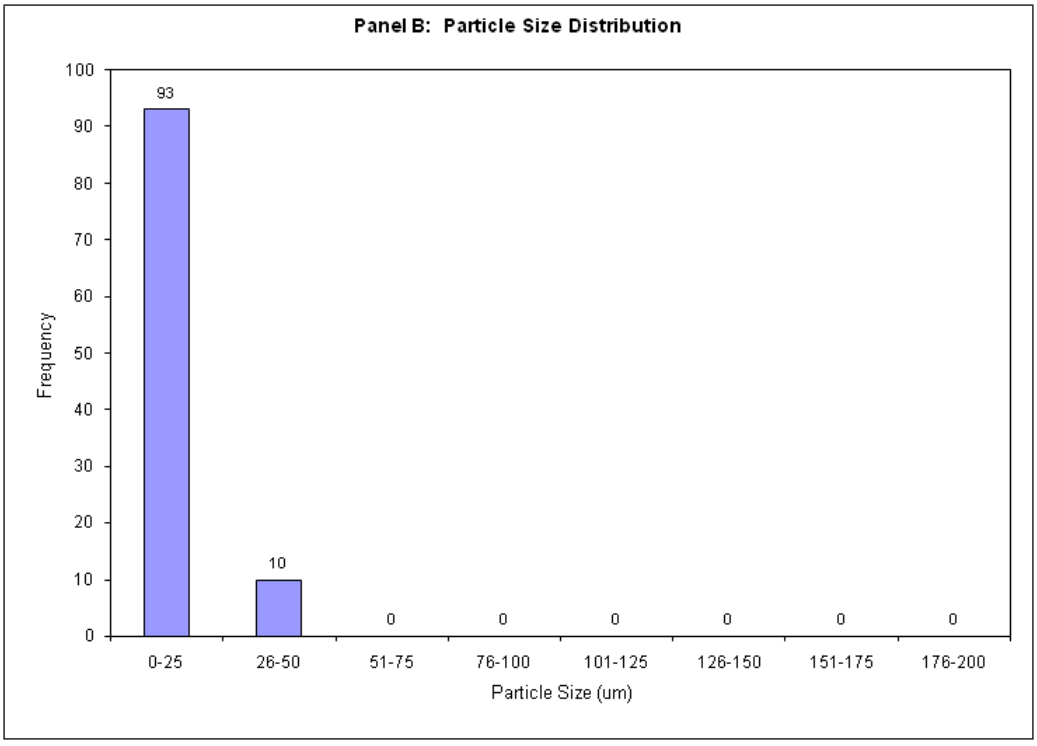
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
As2O3	35	35	34.00%	34.00%	258	258	7	25.52%	25.52%	96.80%	96.80%
FeAs Oxide	38	38	36.90%	36.90%	546	546	14	54.01%	54.01%	2.80%	2.80%
MnAs Oxide	3	3	2.90%	2.90%	95	95	32	9.40%	9.40%	0.30%	0.30%
Other	26	21	25.20%	20.40%	107	99	55	10.58%	9.79%	0.08%	0.08%
Fe & Zn Sulfates	1	1	1.00%	1.00%	5	5	5	0.49%	0.49%	0.02%	0.02%
Total	103	98	100%	95%	1011	1003	10	100%	99%	100%	100%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	47.6%	42.7%	19.4%	19.4%
6–10	18.4%	18.4%	38.9%	38.9%
11–20	24.3%	24.3%	40.2%	40.2%
21–50	9.7%	9.7%	1.5%	1.5%
51–100	0.0%	0.0%	0.0%	0.0%
101–150	0.0%	0.0%	0.0%	0.0%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	95%	100%	100%

PHASE III EXPERIMENT 2 – VBI70 TM5
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 2 – VBI70 TM6

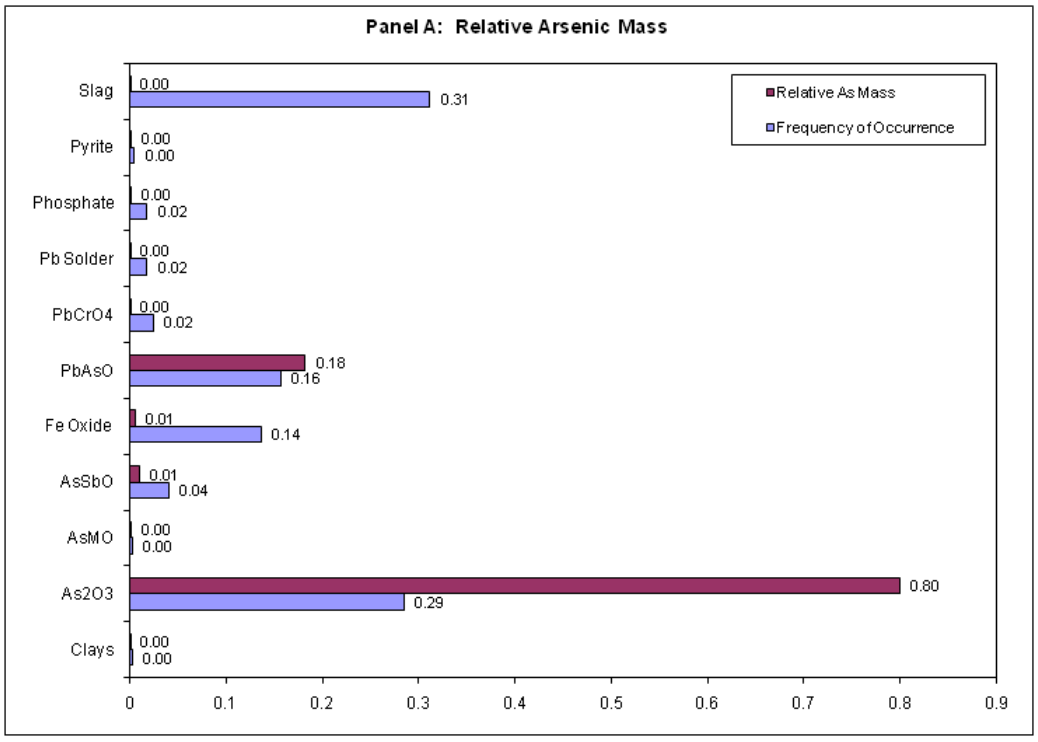
ARSENIC ASSOCIATION SUMMARY STATISTICS

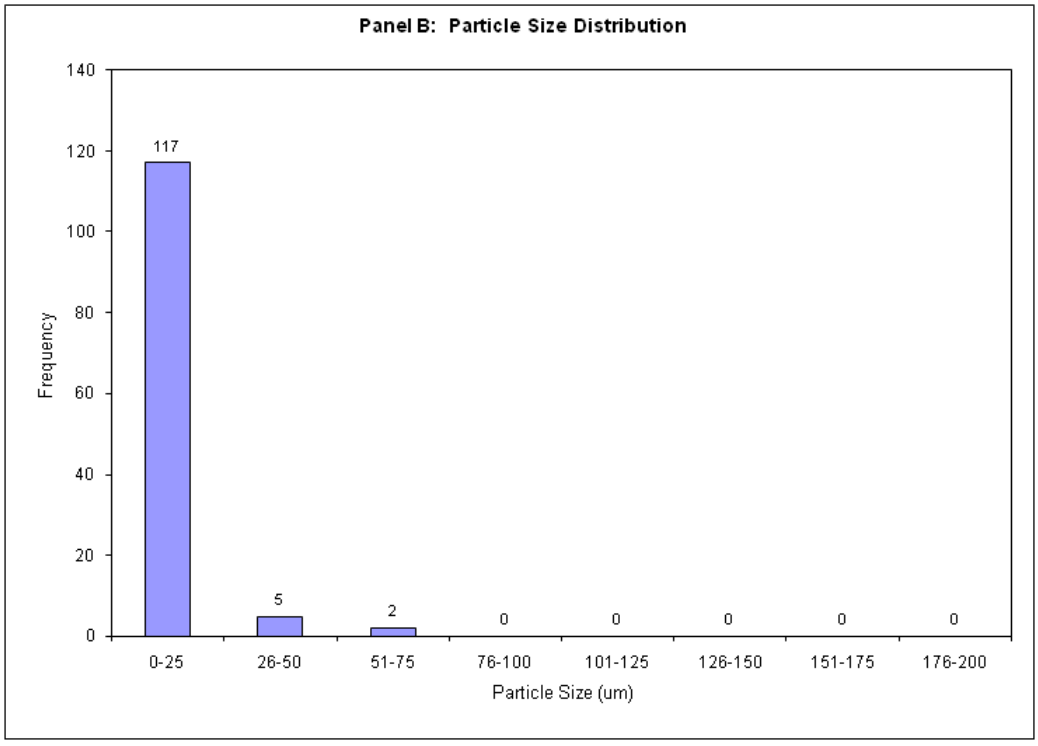
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
As2O3	30	30	24.20%	24.20%	237	237	8	28.52%	28.52%	79.92%	79.92%
FeAs Oxide	7	7	5.60%	5.60%	113	113	16	13.60%	13.60%	0.52%	0.52%
PbAs Oxide	47	47	37.90%	37.90%	130	130	3	15.64%	15.64%	18.21%	18.21%
As Phosphate	2	2	1.60%	1.60%	15	15	8	1.81%	1.81%	0.13%	0.13%
Other	38	38	30.60%	30.60%	336	336	66	40.43%	40.43%	1.22%	1.22%
Total	124	124	100%	100%	831	831	7	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	62.9%	62.9%	22.2%	22.2%
6–10	23.4%	23.4%	57.3%	57.3%
11–20	6.5%	6.5%	11.4%	11.4%
21–50	5.6%	5.6%	9.1%	9.1%
51–100	1.6%	1.6%	0.0%	0.0%
101–150	0.0%	0.0%	0.0%	0.0%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE III EXPERIMENT 2 – VBI70 TM6
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 3 – BUTTE TM2

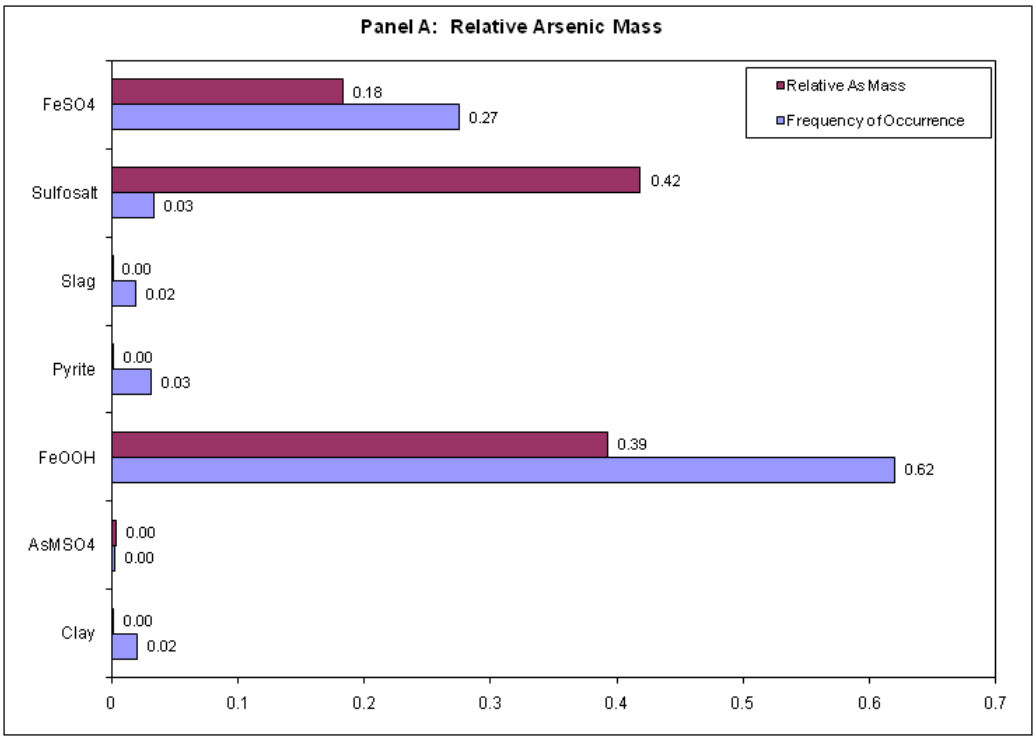
ARSENIC ASSOCIATION SUMMARY STATISTICS

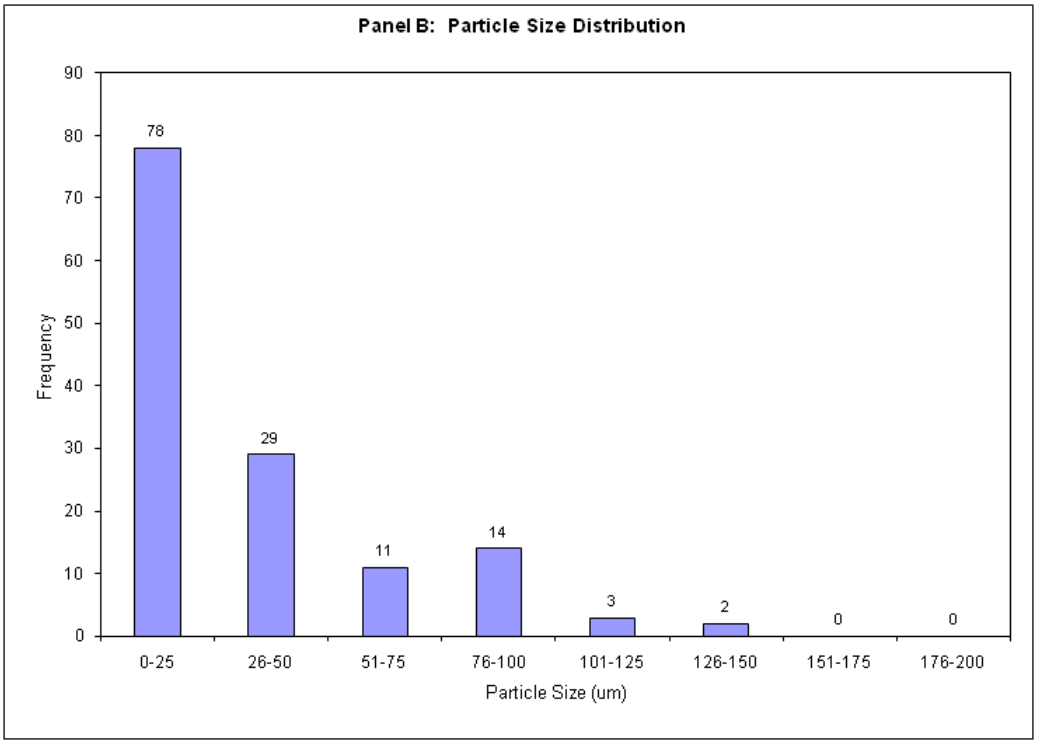
	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
Phase Grouping	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	75	75	54.70%	54.70%	2770	2770	37	61.97%	61.97%	39.28%	39.28%
Other	10	10	7.30%	7.30%	322	322	203	7.20%	7.20%	0.57%	0.57%
Sulfosalts	20	20	14.60%	14.60%	150	150	8	3.36%	3.36%	41.87%	41.87%
Fe & Zn Sulfates	32	32	23.40%	23.40%	1228	1228	38	27.47%	27.47%	18.28%	18.28%
Total	137	137	100%	100%	4470	4470	33	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

	Frequency		Relative Arsenic Mass	
Particle Size (µm)	Total	*Liberated*	Total	*Liberated*
0–5	17.5%	17.5%	14.5%	14.5%
6–10	10.9%	10.9%	12.8%	12.8%
11–20	19.7%	19.7%	8.8%	8.8%
21–50	29.9%	29.9%	31.0%	31.0%
51–100	18.2%	18.2%	24.4%	24.4%
101–150	3.6%	3.6%	8.4%	8.4%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE III EXPERIMENT 3 – BUTTE TM2
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 4 – ABERJONA RIVER TM1

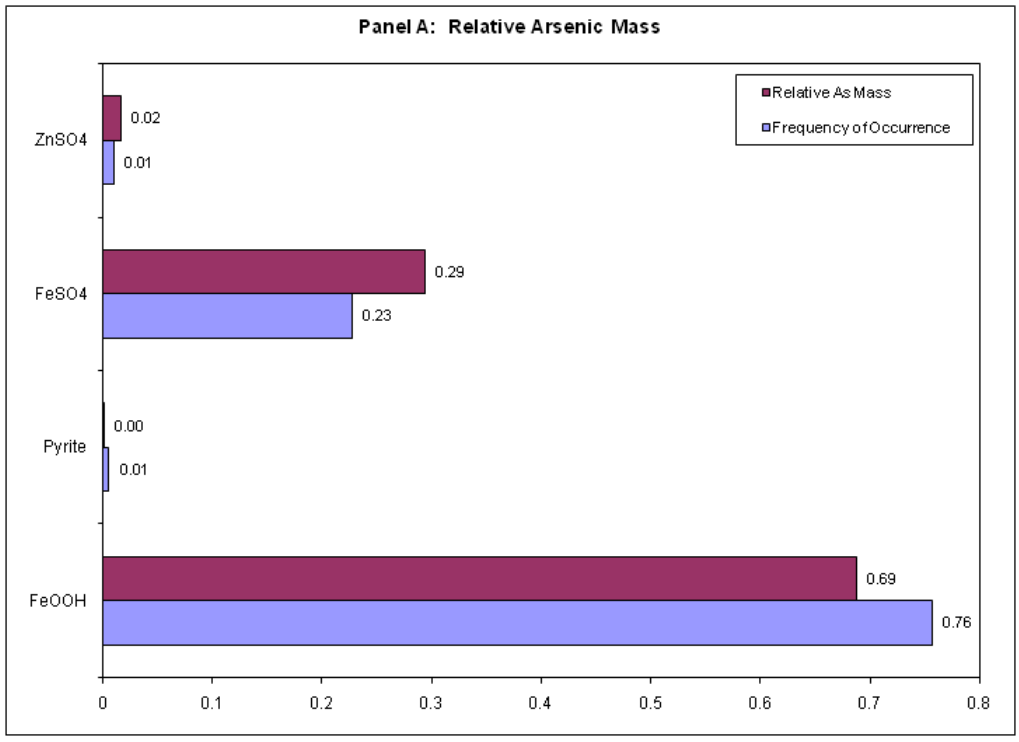
ARSENIC ASSOCIATION SUMMARY STATISTICS

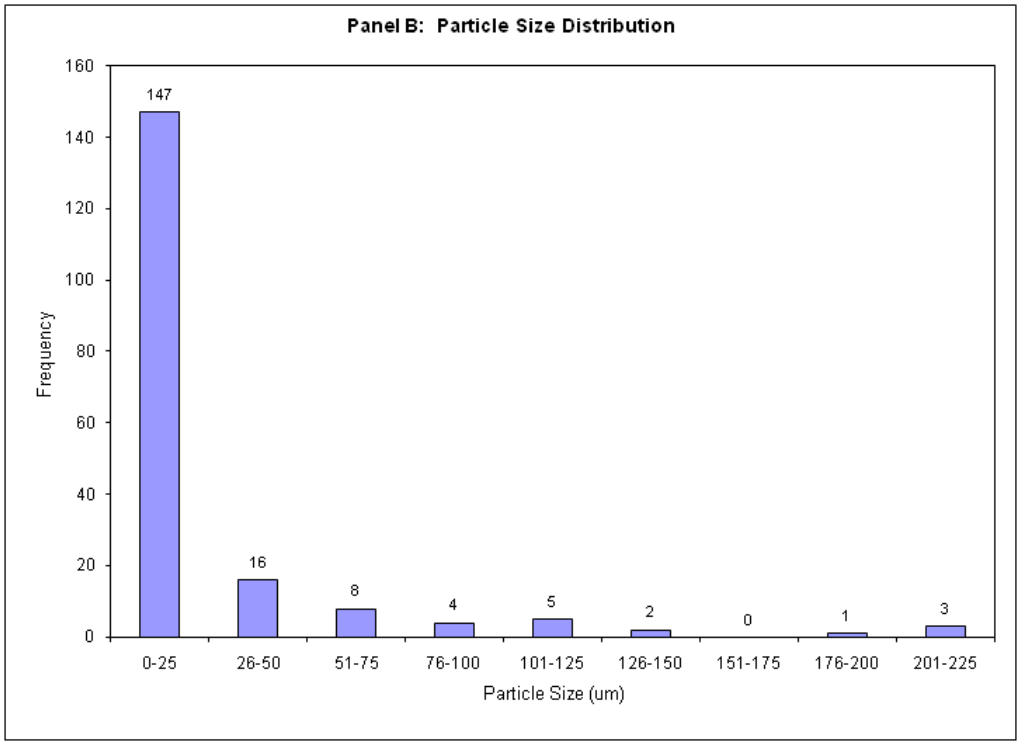
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	129	129	69.40%	69.40%	3197	3197	25	75.63%	75.63%	68.79%	68.79%
Other	24	24	12.90%	12.90%	24	24	1	0.57%	0.57%	0.16%	0.16%
Fe & Zn Sulfates	33	25	17.70%	13.40%	1006	967	47	23.80%	22.88%	31.05%	29.86%
Total	186	178	100%	96%	4227	4188	23	100%	99%	100%	99%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	33.3%	31.2%	3.1%	2.9%
6–10	34.4%	32.3%	12.4%	11.5%
11–20	6.5%	6.5%	4.3%	4.3%
21–50	13.4%	13.4%	20.6%	20.6%
51–100	6.5%	6.5%	19.2%	19.2%
101–150	3.8%	3.8%	18.2%	18.2%
151–200	0.5%	0.5%	6.1%	6.1%
201–250	1.6%	1.6%	16.1%	16.1%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	96%	100%	99%

PHASE III EXPERIMENT 4 – ABERJONA RIVER TM1
SPECIATION AND PARTICLE SIZE DATA





PHASE III EXPERIMENT 4 – ABERJONA RIVER TM2

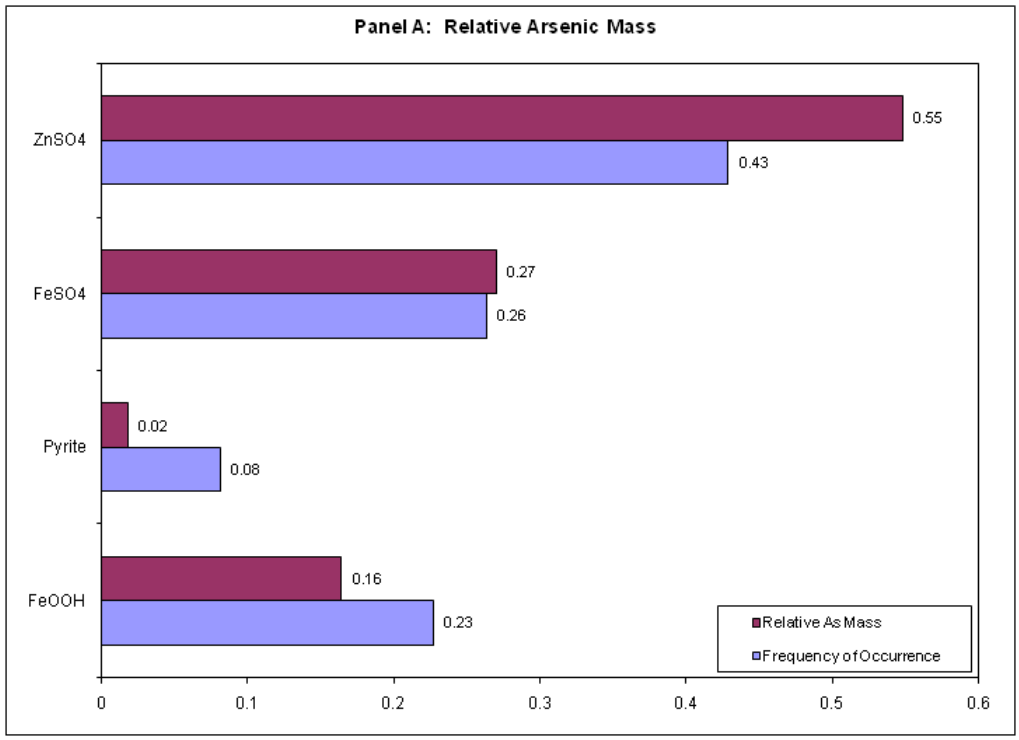
ARSENIC ASSOCIATION SUMMARY STATISTICS

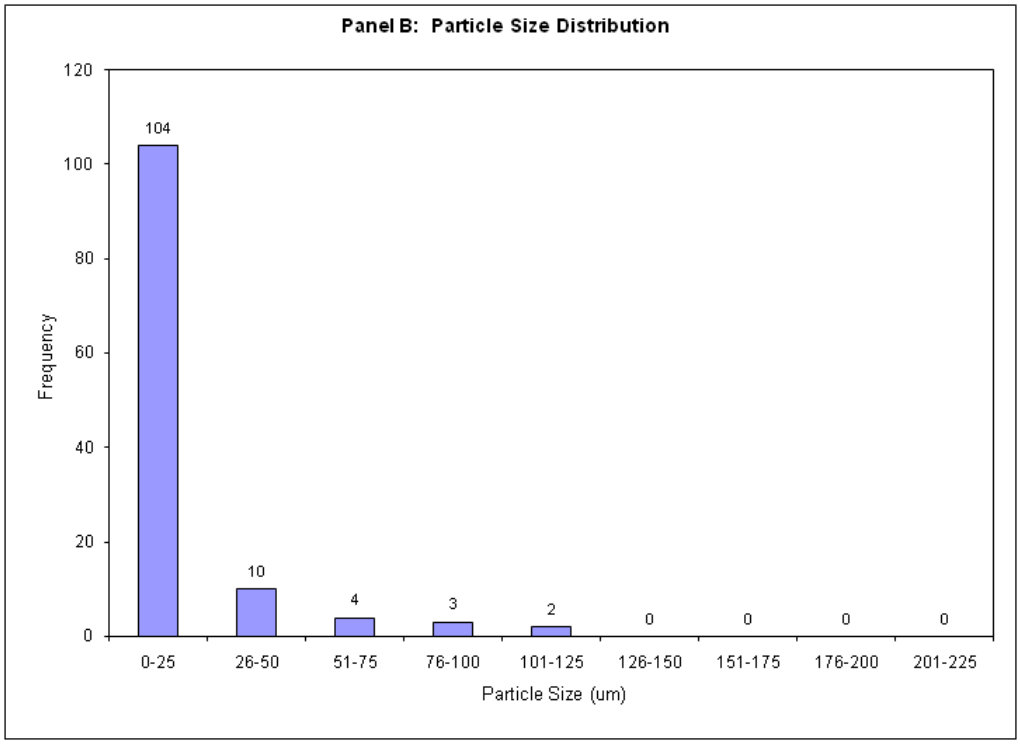
Phase Grouping	Count		Count Frequency		Particle Size (µm)			Size Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*	Total	*Liberated*	Mean	Total	*Liberated*	Total	*Liberated*
FeAs Oxide	12	12	9.80%	9.80%	386	386	32	22.69%	22.69%	16.40%	16.40%
Other	29	29	23.60%	23.60%	138	138	5	8.11%	8.11%	1.78%	1.78%
Fe & Zn Sulfates	82	82	66.70%	66.70%	1177	1177	33	69.19%	69.19%	81.82%	81.82%
Total	123	123	100%	100%	1701	1701	14	100%	100%	100%	100%

PARTICLE SIZE DISTRIBUTION

Particle Size (µm)	Frequency		Relative Arsenic Mass	
	Total	*Liberated*	Total	*Liberated*
0–5	59.3%	59.3%	11.6%	11.6%
6–10	8.9%	8.9%	3.8%	3.8%
11–20	15.4%	15.4%	16.7%	16.7%
21–50	8.9%	8.9%	21.7%	21.7%
51–100	5.7%	5.7%	32.3%	32.3%
101–150	1.6%	1.6%	13.9%	13.9%
151–200	0.0%	0.0%	0.0%	0.0%
201–250	0.0%	0.0%	0.0%	0.0%
>250	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

PHASE III EXPERIMENT 4 – ABERJONA RIVER TM2
SPECIATION AND PARTICLE SIZE DATA





APPENDIX D

DETAILED RAW DATA FILES (see electronic files on attached CD)

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1005	4	Control	-2	0.0		2	2	1860	3.7		3.7
1006	4	Control	-2	0.0		2	2	820	1.6		1.6
1022	4	Control	-2	0.0		2	2	1360	2.7		2.7
1030	4	Control	-2	0.0		3	3	1000	3.0		3.0
1016	5	NaAs_Oral	-2	0.0	<	1	0.5	2020	1.0		1.0
1021	5	NaAs_Oral	-2	0.0		2	2	1400	2.8		2.8
1035	5	NaAs_Oral	-2	0.0		1	1	2460	2.5		2.5
1045	5	NaAs_Oral	-2	0.0		2	2	660	1.3		1.3
1001	6	NaAs_Oral	-2	0.0		2	2	1540	3.1		3.1
1009	6	NaAs_Oral	-2	0.0		3	3	1360	4.1		4.1
1027	6	NaAs_Oral	-2	0.0		2	2	1460	2.9		2.9
1028	6	NaAs_Oral	-2	0.0		2	2	1540	3.1		3.1
1018	7	NaAs_Oral	-2	0.0		3.3	3.3	1500	5.0		5.0
1024	7	NaAs_Oral	-2	0.0	<	1	0.5	460	0.2		0.2
1029	7	NaAs_Oral	-2	0.0	<	1	0.5	2120	1.1		1.1
1036	7	NaAs_Oral	-2	0.0		1	1	3180	3.2		3.2
1011	8	California Gulch AV Slag	-2	0.0		2	2	1200	2.4		2.4
1013	8	California Gulch AV Slag	-2	0.0	<	1	0.5	2580	1.3		1.3
1025	8	California Gulch AV Slag	-2	0.0	<	1	0.5	2440	1.2		1.2
1034	8	California Gulch AV Slag	-2	0.0		3	3	1580	4.7		4.7
1002	9	California Gulch AV Slag	-2	0.0		1	1	3100	3.1		3.1
1004	9	California Gulch AV Slag	-2	0.0	<	1	0.5	4500	2.3		2.3
1043	9	California Gulch AV Slag	-2	0.0		2	2	3160	6.3		6.3

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1046	9	California Gulch AV Slag	-2	0.0		3	3	1500	4.5		4.5
1019	10	California Gulch AV Slag	-2	0.0		4.9	4.9	820	4.0		4.0
1023	10	California Gulch AV Slag	-2	0.0		5.6	5.6	760	4.3		4.3
1031	10	California Gulch AV Slag	-2	0.0		2	2	1420	2.8		2.8
1042	10	California Gulch AV Slag	-2	0.0	<	1	0.5	9240	4.6		4.6
1014	1	NaAs_IV	-2	0.0		7.8	7.8	390	3.0		3.0
1017	1	NaAs_IV	-2	0.0	<	1	0.5	9490	4.7		4.7
1020	1	NaAs_IV	-2	0.0		1	1	1440	1.4		1.4
1039	1	NaAs_IV	-2	0.0		6.6	6.6	960	6.3		6.3
1005	4	Control	2	0.0		3	3	580	1.7		1.7
1006	4	Control	2	0.0		3	3	575	1.7		1.7
1022	4	Control	2	0.0		3	3	700	2.1		2.1
1030	4	Control	2	0.0		2	2	540	1.1		1.1
1016	5	NaAs_Oral	2	52.8		1	1	1340	1.3		1.3
1021	5	NaAs_Oral	2	52.8	<	1	0.5	1090	0.5		0.5
1035	5	NaAs_Oral	2	52.8		2	2	810	1.6		1.6
1045	5	NaAs_Oral	2	52.8		3.4	3.4	260	0.9		0.9
1001	6	NaAs_Oral	2	230.5		2	2	500	1.0		1.0
1009	6	NaAs_Oral	2	230.5		3	3	360	1.1		1.1
1027	6	NaAs_Oral	2	230.5		2	2	700	1.4		1.4
1028	6	NaAs_Oral	2	230.5		2	2	1700	3.4		3.4
1018	7	NaAs_Oral	2	523.3		1	1	1660	1.7		1.7
1024	7	NaAs_Oral	2	523.3	<	1	0.5	500	0.3		0.3
1029	7	NaAs_Oral	2	523.3	<	1	0.5	2600	1.3		1.3
1036	7	NaAs_Oral	2	523.3	<	1	0.5	2100	1.1		1.1

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1011	8	California Gulch AV Slag	2	212.4		3.2	3.2	1040	3.3		3.3
1013	8	California Gulch AV Slag	2	212.4		1	1	2800	2.8		2.8
1025	8	California Gulch AV Slag	2	212.4		3.8	3.8	1600	6.1		6.1
1034	8	California Gulch AV Slag	2	212.4		15	15	680	10.2		10.2
1002	9	California Gulch AV Slag	2	575.8		18	18	1380	24.8		24.8
1004	9	California Gulch AV Slag	2	575.8		23	23	980	22.5		22.5
1043	9	California Gulch AV Slag	2	575.8		8.1	8.1	2340	19.0		19.0
1046	9	California Gulch AV Slag	2	575.8		67	67	640	42.9		42.9
1019	10	California Gulch AV Slag	2	1311.9		130	130	380	49.4		49.4
1023	10	California Gulch AV Slag	2	1311.9		34	34	980	33.3		33.3
1031	10	California Gulch AV Slag	2	1311.9		68	68	420	28.6		28.6
1042	10	California Gulch AV Slag	2	1311.9		24	24	1280	30.7		30.7
1014	1	NaAs_IV	2	53.8		100	100	390	39.0		39.0
1017	1	NaAs_IV	2	53.8		18	18	1220	22.0		22.0
1020	1	NaAs_IV	2	53.8		43	43	560	24.1		24.1
1039	1	NaAs_IV	2	53.8		41	41	600	24.6		24.6
1005	4	Control	5	0.0		5.4	5.4	515	2.8		2.8
1006	4	Control	5	0.0		2	2	800	1.6		1.6
1022	4	Control	5	0.0		2	2	460	0.9		0.9
1030	4	Control	5	0.0	<	1	0.5	510	0.3		0.3

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1016	5	NaAs_Oral	5	58.1		6.7	6.7	1315	8.8		8.8
1021	5	NaAs_Oral	5	58.1		15	15	1005	15.1		15.1
1035	5	NaAs_Oral	5	58.1		8.4	8.4	1025	8.6		8.6
1045	5	NaAs_Oral	5	58.1		28	28	480	13.4		13.4
1001	6	NaAs_Oral	5	243.8		41	41	845	34.6		34.6
1009	6	NaAs_Oral	5	243.8		60	60	650	39.0		39.0
1027	6	NaAs_Oral	5	243.8		31	31	1265	39.2		39.2
1028	6	NaAs_Oral	5	243.8		27	27	2100	56.7		56.7
1018	7	NaAs_Oral	5	551.3		95	95	1045	99.3		99.3
1024	7	NaAs_Oral	5	551.3		70	70	685	48.0		48.0
1029	7	NaAs_Oral	5	551.3		69	69	1240	85.6		85.6
1036	7	NaAs_Oral	5	551.3		100	100	1665	166.5		166.5
1011	8	California Gulch AV Slag	5	237.4		5.4	5.4	1345	7.3		7.3
1013	8	California Gulch AV Slag	5	237.4		3	3	2830	8.5		8.5
1025	8	California Gulch AV Slag	5	237.4		4.5	4.5	2535	11.4		11.4
1034	8	California Gulch AV Slag	5	237.4		5.4	5.4	1385	7.5		7.5
1011	8	California Gulch AV Slag	5	237.4		5.4	5.4	1345	7.3		7.3
1013	8	California Gulch AV Slag	5	237.4		3	3	2830	8.5		8.5
1025	8	California Gulch AV Slag	5	237.4		4.5	4.5	2535	11.4		11.4
1034	8	California Gulch AV Slag	5	237.4		5.4	5.4	1385	7.5		7.5
1002	9	California Gulch AV Slag	5	609.3		16	16	1290	20.6		20.6

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1004	9	California Gulch AV Slag	5	609.3		15	15	1045	15.7		15.7
1043	9	California Gulch AV Slag	5	609.3		12	12	1540	18.5		18.5
1046	9	California Gulch AV Slag	5	609.3		26	26	680	17.7		17.7
1002	9	California Gulch AV Slag	5	609.3		16	16	1290	20.6		20.6
1004	9	California Gulch AV Slag	5	609.3		15	15	1045	15.7		15.7
1043	9	California Gulch AV Slag	5	609.3		12	12	1540	18.5		18.5
1046	9	California Gulch AV Slag	5	609.3		26	26	680	17.7		17.7
1014	1	NaAs_IV	5	58.4		17	17	1645	28.0		28.0
1017	1	NaAs_IV	5	58.4		16	16	1585	25.4		25.4
1020	1	NaAs_IV	5	58.4		76	76	470	35.7		35.7
1039	1	NaAs_IV	5	58.4		43	43	745	32.0		32.0
1019	10	California Gulch AV Slag	5	1418.8		84	84	485	40.7		40.7
1023	10	California Gulch AV Slag	5	1418.8		33	33	1305	43.1		43.1
1031	10	California Gulch AV Slag	5	1418.8		53	53	860	45.6		45.6
1042	10	California Gulch AV Slag	5	1418.8		54	54	1095	59.1		59.1
1019	10	California Gulch AV Slag	5	1418.8		84	84	485	40.7		40.7
1023	10	California Gulch AV Slag	5	1418.8		33	33	1305	43.1		43.1
1031	10	California Gulch AV Slag	5	1418.8		53	53	860	45.6		45.6

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1042	10	California Gulch AV Slag	5	1418.8		54	54	1095	59.1		59.1
1014	1	NaAs_IV	8	64.5		34	34	930	31.6		31.6
1017	1	NaAs_IV	8	64.5		19	19	1905	36.2		36.2
1020	1	NaAs_IV	8	64.5		29	29	880	25.5		25.5
1039	1	NaAs_IV	8	64.5		39	39	895	34.9		34.9
1005	4	Control	8	0.0		4.9	4.9	570	2.8		2.8
1006	4	Control	8	0.0		3	3	880	2.6		2.6
1022	4	Control	8	0.0		2	2	600	1.2		1.2
1030	4	Control	8	0.0		3.6	3.6	150	0.5		0.5
1016	5	NaAs_Oral	8	60.2		8	8	1920	15.4		15.4
1021	5	NaAs_Oral	8	60.2		11	11	1600	17.6		17.6
1035	5	NaAs_Oral	8	60.2		9.6	9.6	1320	12.7		12.7
1045	5	NaAs_Oral	8	60.2		10	10	1160	11.6		11.6
1001	6	NaAs_Oral	8	256.5		82	82	670	54.9		54.9
1009	6	NaAs_Oral	8	256.5		53	53	880	46.6		46.6
1027	6	NaAs_Oral	8	256.5		74	74	880	65.1		65.1
1028	6	NaAs_Oral	8	256.5		67	67	1240	83.1		83.1
1018	7	NaAs_Oral	8	612.5		180	180	1410	253.8		253.8
1024	7	NaAs_Oral	8	612.5		65	65	780	50.7		50.7
1029	7	NaAs_Oral	8	612.5		47	47	2100	98.7		98.7
1036	7	NaAs_Oral	8	612.5		100	100	2700	270.0		270.0
1011	8	California Gulch AV Slag	8	263.9		4.5	4.5	2560	11.5		11.5
1013	8	California Gulch AV Slag	8	263.9		5.2	5.2	3380	17.6		17.6
1025	8	California Gulch AV Slag	8	263.9		5.6	5.6	2860	16.0		16.0
1034	8	California Gulch AV Slag	8	263.9		8.5	8.5	1470	12.5		12.5

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1002	9	California Gulch AV Slag	8	673.8		9.9	9.9	1720	17.0		17.0
1004	9	California Gulch AV Slag	8	673.8		13	13	1350	17.6		17.6
1043	9	California Gulch AV Slag	8	673.8		8.5	8.5	4250	36.1		36.1
1046	9	California Gulch AV Slag	8	673.8		140	140	385	53.9		53.9
1019	10	California Gulch AV Slag	8	1550.0		26	26	1180	30.7		30.7
1031	10	California Gulch AV Slag	8	1550.0		17	17	2440	41.5		41.5
1042	10	California Gulch AV Slag	8	1550.0		69	69	855	59.0		59.0
1014	1	NaAs_IV	11	69.8		19	19	2330	44.3		44.3
1017	1	NaAs_IV	11	69.8		20	20	2045	40.9		40.9
1020	1	NaAs_IV	11	69.8		19	19	1250	23.8		23.8
1039	1	NaAs_IV	11	69.8		46	46	1480	68.1		68.1
1005	4	Control	11	0.0		3	3	850	2.6		2.6
1006	4	Control	11	0.0		2	2	980	2.0		2.0
1022	4	Control	11	0.0	<	1	0.5	1670	0.8		0.8
1030	4	Control	11	0.0	<	1	0.5	1460	0.7		0.7
1016	5	NaAs_Oral	11	68.8		5.2	5.2	3380	17.6		17.6
1021	5	NaAs_Oral	11	68.8		8.8	8.8	1890	16.6		16.6
1035	5	NaAs_Oral	11	68.8		7.5	7.5	2860	21.5		21.5
1045	5	NaAs_Oral	11	68.8		12	12	1450	17.4		17.4
1001	6	NaAs_Oral	11	277.5		60	60	980	58.8		58.8
1009	6	NaAs_Oral	11	277.5		16	16	1160	18.6		18.6
1027	6	NaAs_Oral	11	277.5		64	64	860	55.0		55.0
1028	6	NaAs_Oral	11	277.5		36	36	1950	70.2		70.2
1018	7	NaAs_Oral	11	667.3		120	120	2600	312.0		312.0

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1024	7	NaAs_Oral	11	667.3		71	71	840	59.6		59.6
1029	7	NaAs_Oral	11	667.3		57	57	2540	144.8		144.8
1036	7	NaAs_Oral	11	667.3		55	55	4180	229.9		229.9
1011	8	California Gulch AV Slag	11	285.0		4.1	4.1	3050	12.5		12.5
1013	8	California Gulch AV Slag	11	285.0		3	3	5130	15.4		15.4
1025	8	California Gulch AV Slag	11	285.0		4.2	4.2	3420	14.4		14.4
1034	8	California Gulch AV Slag	11	285.0		8.4	8.4	1260	10.6		10.6
1002	9	California Gulch AV Slag	11	737.5		18	18	1210	21.8		21.8
1004	9	California Gulch AV Slag	11	737.5		21	21	1400	29.4		29.4
1043	9	California Gulch AV Slag	11	737.5		5.4	5.4	5700	30.8		30.8
1046	9	California Gulch AV Slag	11	737.5		61	61	960	58.6		58.6
1019	10	California Gulch AV Slag	11	1685.6		30	30	1260	37.8		37.8
1023	10	California Gulch AV Slag	11	1685.6		14	14	3460	48.4		48.4
1031	10	California Gulch AV Slag	11	1685.6		9.6	9.6	5960	57.2		57.2
1042	10	California Gulch AV Slag	11	1685.6		58	58	1660	96.3		96.3
1014	1	NaAs_IV	14	76.8		14	14	2940	41.2		41.2
1017	1	NaAs_IV	14	76.8		19	19	2180	41.4		41.4
1020	1	NaAs_IV	14	76.8		27	27	1290	34.8		34.8
1039	1	NaAs_IV	14	76.8		19	19	940	17.9		17.9
1005	4	Control	14	0.0		1	1	1320	1.3		1.3

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1006	4	Control	14	0.0		2	2	730	1.5		1.5
1022	4	Control	14	0.0		3	3	740	2.2		2.2
1030	4	Control	14	0.0		1	1	1020	1.0		1.0
1016	5	NaAs_Oral	14	76.9		2	2	6335	12.7		12.7
1021	5	NaAs_Oral	14	76.9		10	10	1800	18.0		18.0
1035	5	NaAs_Oral	14	76.9		7.6	7.6	1055	8.0		8.0
1045	5	NaAs_Oral	14	76.9		7.8	7.8	1305	10.2		10.2
1001	6	NaAs_Oral	14	312.1		36	36	760	27.4		27.4
1009	6	NaAs_Oral	14	312.1		21	21	2160	45.4		45.4
1027	6	NaAs_Oral	14	312.1		74	74	920	68.1		68.1
1028	6	NaAs_Oral	14	312.1		73	73	990	72.3		72.3
1018	7	NaAs_Oral	14	741.5		77	77	2310	177.9		177.9
1024	7	NaAs_Oral	14	741.5		56	56	780	43.7		43.7
1029	7	NaAs_Oral	14	741.5		39	39	3090	120.5		120.5
1036	7	NaAs_Oral	14	741.5		52	52	5260	273.5		273.5
1011	8	California Gulch AV Slag	14	317.7		3.9	3.9	4480	17.5		17.5
1013	8	California Gulch AV Slag	14	317.7		5.6	5.6	5840	32.7		32.7
1025	8	California Gulch AV Slag	14	317.7		2	2	3160	6.3		6.3
1034	8	California Gulch AV Slag	14	317.7		14	14	1320	18.5		18.5
1002	9	California Gulch AV Slag	14	795.8		26	26	1380	35.9		35.9
1004	9	California Gulch AV Slag	14	795.8		22	22	1780	39.2		39.2
1043	9	California Gulch AV Slag	14	795.8		7.7	7.7	3800	29.3		29.3
1046	9	California Gulch AV Slag	14	795.8		30	30	820	24.6		24.6

Phase II Pilot 1 (Experiment 7): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1019	10	California Gulch AV Slag	14	1894.4		36	36	1460	52.6		52.6
1023	10	California Gulch AV Slag	14	1894.4		18	18	3560	64.1		64.1
1031	10	California Gulch AV Slag	14	1894.4		15	15	2900	43.5		43.5
1041	1	NaAs_IV	8	64.5							
1023	10	California Gulch AV Slag	8	1550.0							
1041	1	NaAs_IV	11	69.8							
1041	1	NaAs_IV	14	76.8							
1042	10	California Gulch AV Slag	14	1894.4							
1041	1	NaAs (IV)	-2	0.0							
1041	1	NaAs (IV)	2	53.8							
1041	1	NaAs (IV)	5	58.4							

Samples Lost

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 11: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
1109	1	Control	-3	0		3.5	3.5	840	2.9		2.9
1124	1	Control	-3	0		3	3	960	2.9		2.9
1135	1	Control	-3	0		2	2	1720	3.4		3.4
1139	1	Control	-3	0		2	2	1860	3.7		3.7
1151	1	Control	-3	0		5	5	960	4.8		4.8
1126	7	Murray Smelter Soil	-3	0		2	2	1550	3.1		3.1

1137	7	Murray Smelter Soil	-3	0		3	3	580	1.7		1.7
1140	7	Murray Smelter Soil	-3	0		3.2	3.2	860	2.8		2.8
1141	7	Murray Smelter Soil	-3	0		6.5	6.5	520	3.4		3.4
1155	7	Murray Smelter Soil	-3	0		5.2	5.2	430	2.2		2.2
1109	1	Control	7	0		2	2	830	1.7		1.7
1124	1	Control	7	0		2	2	840	1.7		1.7
1135	1	Control	7	0	<	1	0.5	1370	0.7		0.7
1139	1	Control	7	0	<	1	0.5	860	0.4		0.4
1151	1	Control	7	0	<	1	0.5	1100	0.6		0.6
1126	7	Murray Smelter Soil	7	659.5		22	22	2300	50.6		50.6
1137	7	Murray Smelter Soil	7	659.5		32	32	1300	41.6		41.6
1140	7	Murray Smelter Soil	7	659.5		26	26	1840	47.8		47.8
1141	7	Murray Smelter Soil	7	659.5		50	50	1010	50.5		50.5
1155	7	Murray Smelter Soil	7	659.5		100	100	400	40.0		40.0
1109	1	Control	14	0		1	1	1320	1.3		1.3
1124	1	Control	14	0		2	2	700	1.4		1.4
1135	1	Control	14	0	<	1	0.5	2440	1.2		1.2
1139	1	Control	14	0	<	1	0.5	1660	0.8		0.8
1151	1	Control	14	0		2	2	1900	3.8		3.8
1126	7	Murray Smelter Soil	14	816.5		21	21	2250	47.3		47.3
1137	7	Murray Smelter Soil	14	816.5		32	32	2430	77.8		77.8
1140	7	Murray Smelter Soil	14	816.5		15	15	2560	38.4		38.4
1141	7	Murray Smelter Soil	14	816.5		48	48	1320	63.4		63.4
1155	7	Murray Smelter Soil	14	816.5		37	37	1080	40.0		40.0

*Non-detects were adjusted to on-half the detection limit.

Phase II Pilot 2 (Experiment 15): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1501	1	Control	0	0.0		3.6	3.6	1920	6.9		6.9
1510	1	Control	0	0.0		2	2	2430	4.9		4.9
1540	1	Control	0	0.0	<	1	0.5	3500	1.8		1.8
1501	1	Control	5	0.0		3.1	3.1	1330	4.1		4.1
1510	1	Control	5	0.0		2	2	2000	4.0		4.0
1540	1	Control	5	0.0		4.3	4.3	2220	9.5		9.5
1502	6	NaAs_Oral	5	253.6		53	53	1000	53.0		53.0
1521	6	NaAs_Oral	5	253.6		120	120	360	43.2		43.2
1523	6	NaAs_Oral	5	253.6		29	29	840	24.4		24.4
1539	6	NaAs_Oral	5	253.6		40	40	1280	51.2		51.2
1509	7	NaAs_Oral	5	652.8		100	100	1380	138.0		138.0
1513	7	NaAs_Oral	5	652.8		60	60	1620	97.2		97.2
1516	7	NaAs_Oral	5	652.8		83	83	920	76.4		76.4
1525	7	NaAs_Oral	5	652.8		190	190	460	87.4		87.4
1512	8	Clark Fork Tailings	5	258.9		51	51	900	45.9		45.9
1532	8	Clark Fork Tailings	5	258.9		35	35	1080	37.8		37.8
1533	8	Clark Fork Tailings	5	258.9		16	16	1320	21.1		21.1
1536	8	Clark Fork Tailings	5	258.9		37	37	580	21.5		21.5
1507	9	Clark Fork Tailings	5	698.5		31	31	1960	60.8		60.8
1522	9	Clark Fork Tailings	5	698.5		22	22	3140	69.1		69.1
1529	9	Clark Fork Tailings	5	698.5		67	67	860	57.6		57.6
1530	9	Clark Fork Tailings	5	698.5		29	29	2280	66.1		66.1
1504	2	NaAs_IV	5	238.8		92	92	980	90.2		90.2
1505	2	NaAs_IV	5	238.8		100	100	1100	110.0		110.0
1511	2	NaAs_IV	5	238.8		290	290	440	127.6		127.6
1527	2	NaAs_IV	5	238.8		220	220	420	92.4		92.4
1503	3	NaAs_IV	5	628.3		300	300	970	291.0		291.0
1515	3	NaAs_IV	5	628.3		600	600	440	264.0		264.0
1531	3	NaAs_IV	5	628.3		790	790	310	244.9		244.9

Phase II Pilot 2 (Experiment 15): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1535	3	NaAs_IV	5	628.3		67	67	3400	227.8		227.8
1518	4	NaAs_Gavage	5	253.3		64	64	720	46.1		46.1
1528	4	NaAs_Gavage	5	253.3		23	23	1620	37.3		37.3
1534	4	NaAs_Gavage	5	253.3		67	67	1120	75.0		75.0
1537	4	NaAs_Gavage	5	253.3		46	46	1190	54.7		54.7
1506	5	NaAs_Gavage	5	611.5		160	160	580	92.8		92.8
1517	5	NaAs_Gavage	5	611.5		74	74	1600	118.4		118.4
1519	5	NaAs_Gavage	5	611.5		390	390	340	132.6		132.6
1538	5	NaAs_Gavage	5	611.5		95	95	760	72.2		72.2
1501	1	Control	8	0.0		2	2	1500	3.0		3.0
1510	1	Control	8	0.0		2	2	1980	4.0		4.0
1540	1	Control	8	0.0	<	1	0.5	6340	3.2		3.2
1502	6	NaAs_Oral	8	276.3		62	62	540	33.5		33.5
1521	6	NaAs_Oral	8	276.3		120	120	300	36.0		36.0
1523	6	NaAs_Oral	8	276.3		110	110	1200	132.0		132.0
1539	6	NaAs_Oral	8	276.3		29	29	2080	60.3		60.3
1509	7	NaAs_Oral	8	708.8		63	63	2100	132.3		132.3
1513	7	NaAs_Oral	8	708.8		79	79	1680	132.7		132.7
1516	7	NaAs_Oral	8	708.8		22	22	3320	73.0		73.0
1512	8	Clark Fork Tailings	8	275.5		19	19	1300	24.7		24.7
1532	8	Clark Fork Tailings	8	275.5		11	11	2060	22.7		22.7
1533	8	Clark Fork Tailings	8	275.5		12	12	1400	16.8		16.8
1536	8	Clark Fork Tailings	8	275.5		21	21	1160	24.4		24.4
1507	9	Clark Fork Tailings	8	769.4		34	34	3180	108.1		108.1
1522	9	Clark Fork Tailings	8	769.4		21	21	2460	51.7		51.7
1529	9	Clark Fork Tailings	8	769.4		39	39	1800	70.2		70.2
1530	9	Clark Fork Tailings	8	769.4		26	26	3180	82.7		82.7
1504	2	NaAs_IV	8	241.5		77	77	800	61.6		61.6
1511	2	NaAs_IV	8	241.5		85	85	600	51.0		51.0
1503	3	NaAs_IV	8	664.4		360	360	860	309.6		309.6

Phase II Pilot 2 (Experiment 15): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1515	3	NaAs_IV	8	664.4		320	320	1200	384.0		384.0
1518	4	NaAs_Gavage	8	270.5		37	37	1720	63.6		63.6
1528	4	NaAs_Gavage	8	270.5		40	40	2240	89.6		89.6
1534	4	NaAs_Gavage	8	270.5		29	29	1220	35.4		35.4
1537	4	NaAs_Gavage	8	270.5		31	31	2120	65.7		65.7
1506	5	NaAs_Gavage	8	642.5		200	200	520	104.0		104.0
1517	5	NaAs_Gavage	8	642.5		110	110	1300	143.0		143.0
1519	5	NaAs_Gavage	8	642.5		220	220	540	118.8		118.8
1538	5	NaAs_Gavage	8	642.5		250	250	600	150.0		150.0
1501	1	Control	11	0.0		4.1	4.1	700	2.9		2.9
1510	1	Control	11	0.0		7.4	7.4	340	2.5		2.5
1540	1	Control	11	0.0	<	1	0.5	2820	1.4		1.4
1502	6	NaAs_Oral	11	316.5		57	57	640	36.5		36.5
1521	6	NaAs_Oral	11	316.5		200	200	240	48.0		48.0
1523	6	NaAs_Oral	11	316.5		130	130	400	52.0		52.0
1539	6	NaAs_Oral	11	316.5		42	42	1520	63.8		63.8
1509	7	NaAs_Oral	11	813.8		180	180	980	176.4		176.4
1513	7	NaAs_Oral	11	813.8		110	110	1140	125.4		125.4
1516	7	NaAs_Oral	11	813.8		48	48	2320	111.4		111.4
1525	7	NaAs_Oral	11	813.8		150	150	1040	156.0		156.0
1512	8	Clark Fork Tailings	11	316.0		120	120	500	60.0		60.0
1532	8	Clark Fork Tailings	11	316.0		22	22	960	21.1		21.1
1533	8	Clark Fork Tailings	11	316.0		12	12	2320	27.8		27.8
1536	8	Clark Fork Tailings	11	316.0		54	54	620	33.5		33.5
1507	9	Clark Fork Tailings	11	877.5		39	39	1920	74.9		74.9
1522	9	Clark Fork Tailings	11	877.5		110	110	560	61.6		61.6
1529	9	Clark Fork Tailings	11	877.5		120	120	760	91.2		91.2
1530	9	Clark Fork Tailings	11	877.5		68	68	940	63.9		63.9
1504	2	NaAs_IV	11	281.3		81	81	1240	100.4		100.4
1511	2	NaAs_IV	11	281.3		310	310	400	124.0		124.0

Phase II Pilot 2 (Experiment 15): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1503	3	NaAs_IV	11	752.5		450	450	780	351.0		351.0
1515	3	NaAs_IV	11	752.5		680	680	540	367.2		367.2
1518	4	NaAs_Gavage	11	314.0		25	25	1120	28.0		28.0
1528	4	NaAs_Gavage	11	314.0		49	49	1460	71.5		71.5
1534	4	NaAs_Gavage	11	314.0		140	140	460	64.4		64.4
1537	4	NaAs_Gavage	11	314.0		64	64	800	51.2		51.2
1506	5	NaAs_Gavage	11	740.6		330	330	400	132.0		132.0
1517	5	NaAs_Gavage	11	740.6		140	140	960	134.4		134.4
1519	5	NaAs_Gavage	11	740.6		340	340	420	142.8		142.8
1538	5	NaAs_Gavage	11	740.6		850	850	400	340.0		340.0
1501	1	Control	14	0.0		2	2	4660	9.3		9.3
1510	1	Control	14	0.0		2	2	1960	3.9		3.9
1540	1	Control	14	0.0	<	1	0.5	4800	2.4		2.4
1512	8	Clark Fork Tailings	14	344.3		7	7	5300	37.1		37.1
1532	8	Clark Fork Tailings	14	344.3		31	31	1280	39.7		39.7
1533	8	Clark Fork Tailings	14	344.3		11	11	3880	42.7		42.7
1536	8	Clark Fork Tailings	14	344.3		34	34	4050	137.7		137.7
1507	9	Clark Fork Tailings	14	990.0		25	25	6840	171.0		171.0
1522	9	Clark Fork Tailings	14	990.0		15	15	6920	103.8		103.8
1529	9	Clark Fork Tailings	14	990.0		29	29	4050	117.5		117.5
1530	9	Clark Fork Tailings	14	990.0		10	10	5100	51.0		51.0
1504	2	NaAs_IV	14	306.0		230	230	740	170.2		170.2
1511	2	NaAs_IV	14	306.0		150	150	1060	159.0		159.0
1503	3	NaAs_IV	14	793.8		280	280	1320	369.6		369.6
1515	3	NaAs_IV	14	793.8		360	360	1480	532.8		532.8
1518	4	NaAs_Gavage	14	346.3		23	23	3160	72.7		72.7
1528	4	NaAs_Gavage	14	346.3		68	68	1380	93.8		93.8
1534	4	NaAs_Gavage	14	346.3		56	56	1320	73.9		73.9
1537	4	NaAs_Gavage	14	346.3		26	26	2960	77.0		77.0
1506	5	NaAs_Gavage	14	789.4		54	54	2420	130.7		130.7

Phase II Pilot 2 (Experiment 15): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1517	5	NaAs_Gavage	14	789.4		47	47	3180	149.5		149.5
1538	5	NaAs_Gavage	14	789.4		180	180	680	122.4		122.4
1502	6	NaAs_Oral	14	347.3		55	55	2020	111.1		111.1
1521	6	NaAs_Oral	14	347.3		95	95	580	55.1		55.1
1523	6	NaAs_Oral	14	347.3		49	49	1180	57.8		57.8
1539	6	NaAs_Oral	14	347.3		22	22	3100	68.2		68.2
1509	7	NaAs_Oral	14	879.4		36	36	5540	199.4		199.4
1513	7	NaAs_Oral	14	879.4		280	280	820	229.6		229.6
1516	7	NaAs_Oral	14	879.4		19	19	5420	103.0		103.0
1525	7	NaAs_Oral	14	879.4		25	25	7060	176.5		176.5
1505	2	NaAs_IV	8	241.5							
1535	3	NaAs_IV	8	664.4							
1535	3	NaAs_IV	11	752.5							
1508	2	NaAs_IV	8	241.5							
1527	2	NaAs_IV	8	241.5							
1514	3	NaAs_IV	8	664.4							
1531	3	NaAs_IV	8	664.4							
1525	7	NaAs_Oral	8	708.8							
1505	2	NaAs_IV	11	281.3							
1508	2	NaAs_IV	11	281.3							
1527	2	NaAs_IV	11	281.3							
1514	3	NaAs_IV	11	752.5							
1531	3	NaAs_IV	11	752.5							
1505	2	NaAs_IV	14	306.0							
1508	2	NaAs_IV	14	306.0							
1527	2	NaAs_IV	14	306.0							
1514	3	NaAs_IV	14	793.8							
1531	3	NaAs_IV	14	793.8							
1535	3	NaAs_IV	14	793.8							

Pigs Died Later in Study – Values Not Used

Samples Lost

Phase II Pilot 2 (Experiment 15): Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/day)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/day)	Total Arsenic Excreted (µg/day)	Unreliable?	Final Values (Arsenic Excreted, µg/day)
1519	5	NaAs_Gavage	14	789.4							
1508	2	NaAs_IV	5	238.8							
1514	3	NaAs_IV	5	628.3							

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
206	1	Control	2	0		3	3	3639**	10.9		10.9
226	1	Control	2	0		4	4	3639**	14.6		14.6
205	10	Bingham Creek Channel Soil	2	217.2		1	1	2880	2.9		2.9
210	10	Bingham Creek Channel Soil	2	217.2		2	2	5740	11.5		11.5
213	10	Bingham Creek Channel Soil	2	217.2	<	1	0.5	9000	4.5	x	
218	10	Bingham Creek Channel Soil	2	217.2		5.2	5.2	2210	11.5		11.5
255	10	Bingham Creek Channel Soil	2	217.2		2	2	7000	14.0		14.0
206	1	Control	7	0		4	4	3639**	14.6		14.6
226	1	Control	7	0		11	11	3639**	40.0		40.0
205	10	Bingham Creek Channel Soil	7	240.2		13	13	1340	17.4		17.4
210	10	Bingham Creek Channel Soil	7	240.2		23	23	1800	41.4		41.4
218	10	Bingham Creek Channel Soil	7	240.2		5	5	4100	20.5		20.5
255	10	Bingham Creek Channel Soil	7	240.2		3	3	4040	12.1		12.1
206	1	Control	14	0		4.8	4.8	3639**	17.5		17.5
226	1	Control	14	0	<	1	0.5	3639**	1.8		1.8
205	10	Bingham Creek Channel Soil	14	321.5		8.6	8.6	2320	20.0		20.0
210	10	Bingham Creek Channel Soil	14	321.5		7.6	7.6	2540	19.3		19.3
213	10	Bingham Creek Channel Soil	14	321.5		11	11	2640	29.0		29.0

Phase II Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
218	10	Bingham Creek Channel Soil	14	321.5		3.3	3.3	4160	13.7		13.7
255	10	Bingham Creek Channel Soil	14	321.5		48	48	1170	56.2		56.2
Lost	10	Bingham Creek Channel Soil	7	Sample Lost							

*Non-detects were adjusted to on-half the detection limit.
**Volume not measured: value assumed to be the mean of urine volumes of other Phase II Experiment 2 samples (including day 2) [excluded from variance model].

Phase II Experiment 4: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
408	3	Control	-2	0		2	2	855	1.7		1.7
410	3	Control	-2	0		4	4	1110	4.4		4.4
426	3	Control	-2	0		4	4	545	2.2		
449	3	Control	-2	0		2	2	1610	3.2		3.2
455	3	Control	-2	0		4	4	1090	4.4		
420	5	Murray Smelter Slag	-2	0		3	3	730	2.2		2.2
431	5	Murray Smelter Slag	-2	0	<	2	1	1560	1.6		
432	5	Murray Smelter Slag	-2	0		3	3	1240	3.7		3.7
440	5	Murray Smelter Slag	-2	0	<	2	1	1355	1.4		
446	5	Murray Smelter Slag	-2	0		4	4	1025	4.1		4.1
401	8	Jasper County High Lead Mill	-2	0	<	2	1	1040	1.0		
433	8	Jasper County High Lead Mill	-2	0	<	2	1	3375	3.4		3.4
434	8	Jasper County High Lead Mill	-2	0	<	2	1	1425	1.4		
435	8	Jasper County High Lead Mill	-2	0	<	2	1	1625	1.6		1.6
441	8	Jasper County High Lead Mill	-2	0		4	4	690	2.8		
408	3	Control	7	0	<	2	1	4945	4.9		4.9
410	3	Control	7	0		2	2	3215	6.4		
426	3	Control	7	0		2	2	1970	3.9		3.9
449	3	Control	7	0	<	3	1.5	1510	2.3		
455	3	Control	7	0		3	3	8825	26.5		26.5
420	5	Murray Smelter Slag	7	175.7		12	12	1800	21.6		
431	5	Murray Smelter Slag	7	175.7		4	4	4380	17.5		17.5
432	5	Murray Smelter Slag	7	175.7		15	15	6305	94.6		
440	5	Murray Smelter Slag	7	175.7		8.6	8.6	2975	25.6		25.6
446	5	Murray Smelter Slag	7	175.7		4	4	10205	40.8		
401	8	Jasper County High Lead Mill	7	7.7	<	2	1	13455	13.5	x	
433	8	Jasper County High Lead Mill	7	7.7	<	2	1	2950	3.0		
434	8	Jasper County High Lead Mill	7	7.7	<	2	1	5535	5.5	x	
435	8	Jasper County High Lead Mill	7	7.7		2	2	2845	5.7		
441	8	Jasper County High Lead Mill	7	7.7		4	4	990	4.0		4.0

Phase II Experiment 4: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
408	3	Control	14	0	<	2	1	5860	5.9		
410	3	Control	14	0	<	3	1.5	2920	4.4		4.4
426	3	Control	14	0		4	4	1340	5.4		
449	3	Control	14	0		3	3	1440	4.3		4.3
455	3	Control	14	0		3	3	4070	12.2		
420	5	Murray Smelter Slag	14	215.5		19	19	1270	24.1		24.1
431	5	Murray Smelter Slag	14	215.5		10	10	2530	25.3		
432	5	Murray Smelter Slag	14	215.5		6	6	4330	26.0		26.0
440	5	Murray Smelter Slag	14	215.5		5	5	4000	20.0		
446	5	Murray Smelter Slag	14	215.5	<	2	1	7870	7.9	x	
401	8	Jasper County High Lead Mill	14	9.3		2	2	8570	17.1		
433	8	Jasper County High Lead Mill	14	9.3		3	3	3500	10.5		10.5
434	8	Jasper County High Lead Mill	14	9.3		2	2	7120	14.2		
435	8	Jasper County High Lead Mill	14	9.3		3	3	5515	16.5		16.5
441	8	Jasper County High Lead Mill	14	9.3	<	2	1	2690	2.7		

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
501	3	Control	-3	0	<	2	1	2530	2.5		2.5
513	3	Control	-3	0	<	2	1	6750	6.8	x	
529	3	Control	-3	0		2	2	1440	2.9		2.9
534	3	Control	-3	0	<	2	1	1160	1.2		1.2
547	3	Control	-3	0		3	3	1310	3.9		3.9
509	5	Aspen Berm	-3	0	<	3	1.5	820	1.2		1.2
512	5	Aspen Berm	-3	0		3	3	1830	5.5		5.5
539	5	Aspen Berm	-3	0	<	2	1	1440	1.4		1.4
540	5	Aspen Berm	-3	0		2	2	1630	3.3		3.3
550	5	Aspen Berm	-3	0	<	2	1	1560	1.6		1.6
505	8	Aspen Residential	-3	0	<	2	1	1600	1.6		1.6
506	8	Aspen Residential	-3	0		3	3	1300	3.9		3.9
521	8	Aspen Residential	-3	0		7	7	990	6.9		6.9
553	8	Aspen Residential	-3	0		4	4	750	3.0		3.0
554	8	Aspen Residential	-3	0	<	2	1	2690	2.7		2.7
501	3	Control	7	0		3	3	3100	9.3		9.3
513	3	Control	7	0	<	2	1	11000	11.0	x	
529	3	Control	7	0	<	2	1	2790	2.8		2.8
534	3	Control	7	0		3	3	1320	4.0		4.0
547	3	Control	7	0		4	4	1450	5.8		5.8
509	5	Aspen Berm	7	13.8		5	5	1035	5.2		5.2
512	5	Aspen Berm	7	13.8		3	3	3110	9.3		9.3
539	5	Aspen Berm	7	13.8		3	3	885	2.7		2.7
540	5	Aspen Berm	7	13.8		3	3	1795	5.4		5.4
550	5	Aspen Berm	7	13.8		4	4	1730	6.9		6.9
505	8	Aspen Residential	7	13.3		4	4	1020	4.1		4.1
506	8	Aspen Residential	7	13.3		2	2	1830	3.7		3.7
521	8	Aspen Residential	7	13.3		6	6	1020	6.1		6.1
553	8	Aspen Residential	7	13.3		11	11	540	5.9		5.9

Phase II Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
554	8	Aspen Residential	7	13.3		5	5	740	3.7		3.7
501	3	Control	14	0		3	3	7460	22.4		22.4
513	3	Control	14	0	<	2	1	11500	11.5	x	
529	3	Control	14	0		3	3	2440	7.3		7.3
534	3	Control	14	0	<	2	1	5540	5.5	x	
547	3	Control	14	0	<	2	1	3570	3.6		3.6
509	5	Aspen Berm	14	16.6		6.4	6.4	1330	8.5		8.5
512	5	Aspen Berm	14	16.6	<	2	1	3250	3.3		3.3
539	5	Aspen Berm	14	16.6		3	3	2810	8.4		8.4
540	5	Aspen Berm	14	16.6	<	3	1.5	4110	6.2		6.2
550	5	Aspen Berm	14	16.6		3	3	4120	12.4		12.4
505	8	Aspen Residential	14	16.1		6	6	2855	17.1		17.1
506	8	Aspen Residential	14	16.1	<	2	1	8325	8.3	x	
521	8	Aspen Residential	14	16.1		4	4	1950	7.8		7.8
553	8	Aspen Residential	14	16.1		5	5	2030	10.2		10.2
554	8	Aspen Residential	14	16.1		3	3	2350	7.1		7.1

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 6: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
616	3	Control	-3	0	<	2	1	810	0.8		0.8
644	3	Control	-3	0		2	2	1290	2.6		2.6
651	3	Control	-3	0	<	2	1	2305	2.3		2.3
653	3	Control	-3	0		3	3	970	2.9		2.9
654	3	Control	-3	0		2	2	810	1.6		1.6
602	5	Midvale Slag	-3	0	<	2	1	1480	1.5		1.5
605	5	Midvale Slag	-3	0		3	3	700	2.1		2.1
628	5	Midvale Slag	-3	0	<	2	1	900	0.9		0.9
640	5	Midvale Slag	-3	0	<	2	1	1435	1.4		1.4
650	5	Midvale Slag	-3	0	<	2	1	4520	4.5		4.5
601	8	Butte Soil	-3	0	<	2	1	2630	2.6		2.6
609	8	Butte Soil	-3	0	<	3	1.5	1680	2.5		2.5
618	8	Butte Soil	-3	0	<	2	1	2300	2.3		2.3
621	8	Butte Soil	-3	0	<	2	1	1350	1.4		1.4
635	8	Butte Soil	-3	0	<	2	1	1040	1.0		1.0
616	3	Control	7	0	<	2	1	940	0.9		0.9
644	3	Control	7	0	<	2	1	1630	1.6		1.6
651	3	Control	7	0	<	2	1	2090	2.1		2.1
653	3	Control	7	0	<	2	1	1940	1.9		1.9
654	3	Control	7	0	<	2	1	6700	6.7	x	
602	5	Midvale Slag	7	221.3		12	12	1480	17.8		17.8
605	5	Midvale Slag	7	221.3		6.4	6.4	2665	17.1		17.1
628	5	Midvale Slag	7	221.3		24	24	680	16.3		16.3
640	5	Midvale Slag	7	221.3		5	5	1000	5.0		5.0
650	5	Midvale Slag	7	221.3		5	5	2700	13.5		13.5
601	8	Butte Soil	7	89.7	<	2	1	6500	6.5	x	
609	8	Butte Soil	7	89.7	<	2	1	3340	3.3		3.3
618	8	Butte Soil	7	89.7	<	2	1	2485	2.5		2.5
621	8	Butte Soil	7	89.7	<	2	1	2770	2.8		2.8
635	8	Butte Soil	7	89.7		6.2	6.2	930	5.8		5.8

Phase II Experiment 6: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
616	3	Control	14	0	<	2	1	4010	4.0		4.0
644	3	Control	14	0	<	2	1	1960	2.0		2.0
651	3	Control	14	0	<	2	1	3410	3.4		3.4
653	3	Control	14	0	<	2	1	1920	1.9		1.9
654	3	Control	14	0	<	2	1	4870	4.9		4.9
602	5	Midvale Slag	14	269.1		5	5	1830	9.2		9.2
605	5	Midvale Slag	14	269.1		5	5	2620	13.1		13.1
628	5	Midvale Slag	14	269.1		9.3	9.3	1780	16.6		16.6
640	5	Midvale Slag	14	269.1		16	16	760	12.2		12.2
650	5	Midvale Slag	14	269.1		7	7	1520	10.6		10.6
601	8	Butte Soil	14	108.3	<	2	1	4850	4.9		4.9
609	8	Butte Soil	14	108.3		2	2	2710	5.4		5.4
618	8	Butte Soil	14	108.3	<	2	1	2460	2.5		2.5
621	8	Butte Soil	14	108.3	<	2	1	2950	3.0		3.0
635	8	Butte Soil	14	108.3	<	2	1	3460	3.5		3.5

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
706	1	Control	-3	0	<	2	1	1790	1.8		1.8
714	1	Control	-3	0		2	2	1600	3.2		3.2
718	1	Control	-3	0	<	2	1	2220	2.2		2.2
735	1	Control	-3	0	<	2	1	2200	2.2		2.2
743	1	Control	-3	0	<	2	1	5040	5.0	x	
717	6	California Gulch Phase I Residential Soil	-3	0		4	4	1400	5.6		5.6
723	6	California Gulch Phase I Residential Soil	-3	0	<	2	1	2050	2.1		2.1
725	6	California Gulch Phase I Residential Soil	-3	0	<	2	1	1960	2.0		2.0
732	6	California Gulch Phase I Residential Soil	-3	0	<	2	1	900	0.9		0.9
737	6	California Gulch Phase I Residential Soil	-3	0		27	27	260	7.0		7.0
719	9	California Gulch Fe/Mn PbO	-3	0	<	2	1	1820	1.8		1.8
721	9	California Gulch Fe/Mn PbO	-3	0		4	4	1300	5.2		5.2
729	9	California Gulch Fe/Mn PbO	-3	0		9.5	9.5	540	5.1		5.1
744	9	California Gulch Fe/Mn PbO	-3	0	<	2	1	9440	9.4	x	
745	9	California Gulch Fe/Mn PbO	-3	0		4	4	740	3.0		3.0
706	1	Control	7	0	<	2	1	1360	1.4		1.4
714	1	Control	7	0	<	2	1	2760	2.8		2.8
718	1	Control	7	0	<	2	1	2580	2.6		2.6
735	1	Control	7	0	<	2	1	2000	2.0		2.0
743	1	Control	7	0	<	2	1	7650	7.7	x	
717	6	California Gulch Phase I Residential Soil	7	78.4		3	3	700	2.1		2.1
723	6	California Gulch Phase I Residential Soil	7	78.4	<	2	1	1960	2.0		2.0
725	6	California Gulch Phase I Residential Soil	7	78.4	<	2	1	2480	2.5		2.5
732	6	California Gulch Phase I Residential Soil	7	78.4		3	3	600	1.8		1.8
737	6	California Gulch Phase I Residential Soil	7	78.4		6.5	6.5	680	4.4		4.4
719	9	California Gulch Fe/Mn PbO	7	75.6		5	5	1180	5.9		5.9
721	9	California Gulch Fe/Mn PbO	7	75.6		3	3	2280	6.8		6.8
729	9	California Gulch Fe/Mn PbO	7	75.6		5	5	3600	18.0		18.0
744	9	California Gulch Fe/Mn PbO	7	75.6	<	2	1	5200	5.2	x	
745	9	California Gulch Fe/Mn PbO	7	75.6		4	4	2680	10.7		10.7

Phase II Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
706	1	Control	14	0	<	2	1	4680	4.7		4.7
714	1	Control	14	0	<	2	1	6010	6.0	x	
718	1	Control	14	0	<	2	1	8940	8.9	x	
735	1	Control	14	0	<	2	1	3940	3.9		3.9
743	1	Control	14	0	<	2	1	4760	4.8		4.8
717	6	California Gulch Phase I Residential Soil	14	90.9	<	2	1	2600	2.6		2.6
723	6	California Gulch Phase I Residential Soil	14	90.9	<	2	1	7560	7.6	x	
725	6	California Gulch Phase I Residential Soil	14	90.9	<	2	1	4600	4.6		4.6
732	6	California Gulch Phase I Residential Soil	14	90.9	<	2	1	2940	2.9		2.9
737	6	California Gulch Phase I Residential Soil	14	90.9		4	4	1640	6.6		6.6
719	9	California Gulch Fe/Mn PbO	14	88.9		3	3	3280	9.8		9.8
721	9	California Gulch Fe/Mn PbO	14	88.9		3	3	4520	13.6		13.6
729	9	California Gulch Fe/Mn PbO	14	88.9	<	2	1	7810	7.8	x	
744	9	California Gulch Fe/Mn PbO	14	88.9		2	2	9820	19.6		19.6
745	9	California Gulch Fe/Mn PbO	14	88.9	<	2	1	3960	4.0		4.0

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 8: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
809	5	Control	-3	0		2	2	520	1.0		1.0
830	5	Control	-3	0	<	2	1	1680	1.7		1.7
841	5	Control	-3	0	<	2	1	920	0.9		0.9
848	5	Control	-3	0	<	2	1	2300	2.3		2.3
855	5	Control	-3	0	<	2	1	2560	2.6		2.6
811	10	California Gulch AV Slag	-3	0		4	4	640	2.6		2.6
822	10	California Gulch AV Slag	-3	0	<	2	1	860	0.9		0.9
824	10	California Gulch AV Slag	-3	0		4	4	580	2.3		2.3
837	10	California Gulch AV Slag	-3	0	<	2	1	880	0.9		0.9
856	10	California Gulch AV Slag	-3	0	<	2	1	1180	1.2		1.2
809	5	Control	7	0		3	3	1060	3.2		3.2
830	5	Control	7	0	<	2	1	1600	1.6		1.6
841	5	Control	7	0		2	2	1480	3.0		3.0
848	5	Control	7	0	<	2	1	2380	2.4		2.4
855	5	Control	7	0	<	2	1	4400	4.4		4.4
811	10	California Gulch AV Slag	7	245.1		7.8	7.8	1180	9.2		9.2
822	10	California Gulch AV Slag	7	245.1		5	5	3260	16.3		16.3
824	10	California Gulch AV Slag	7	245.1		14	14	680	9.5		9.5
837	10	California Gulch AV Slag	7	245.1		5	5	2100	10.5		10.5
856	10	California Gulch AV Slag	7	245.1		6	6	4880	29.3		29.3
809	5	Control	14	0		3	3	1260	3.8		3.8
822	5	Control	14	0		2	2	2780	5.6		5.6
824	5	Control	14	0		11	11	1280	14.1		14.1
837	5	Control	14	0		11	11	5240	57.6		57.6
855	5	Control	14	0	<	2	1	8640	8.6	x	
811	10	California Gulch AV Slag	14	290.6		13	13	920	12.0		12.0
830	10	California Gulch AV Slag	14	290.6	<	2	1	4900	4.9		4.9
841	10	California Gulch AV Slag	14	290.6		2	2	940	1.9		1.9
848	10	California Gulch AV Slag	14	290.6	<	2	1	1300	1.3		1.3
856	10	California Gulch AV Slag	14	290.6		3	3	4480	13.4		13.4

*Non-detects were adjusted to on-half the detection limit.

Phase II Experiment 9: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
901	2	Control	-3	0		9.2	9.2	360	3.3		3.3
902	2	Control	-3	0		9.2	9.2	600	5.5		5.5
920	2	Control	-3	0	<	1	0.5	6940	3.5	x	
925	2	Control	-3	0		15	15	540	8.1		8.1
928	2	Control	-3	0		8.6	8.6	390	3.4		3.4
906	7	Palmerton Location 2	-3	0		3.7	3.7	480	1.8		1.8
908	7	Palmerton Location 2	-3	0		9	9	280	2.5		2.5
916	7	Palmerton Location 2	-3	0		6.6	6.6	760	5.0		5.0
918	7	Palmerton Location 2	-3	0		10	10	320	3.2		3.2
922	7	Palmerton Location 2	-3	0		5.7	5.7	1660	9.5		9.5
917	10	Palmerton Location 4	-3	0		4.8	4.8	500	2.4		2.4
921	10	Palmerton Location 4	-3	0		4.5	4.5	760	3.4		3.4
939	10	Palmerton Location 4	-3	0		3	3	2740	8.2		8.2
941	10	Palmerton Location 4	-3	0		2	2	2780	5.6		5.6
945	10	Palmerton Location 4	-3	0		11	11	160	1.8		1.8
901	2	Control	7	0		7.9	7.9	500	4.0		4.0
902	2	Control	7	0		3.3	3.3	1320	4.4		4.4
920	2	Control	7	0		2	2	2240	4.5		4.5
925	2	Control	7	0		3.3	3.3	920	3.0		3.0
928	2	Control	7	0		2	2	1140	2.3		2.3
906	7	Palmerton Location 2	7	131.6		4.8	4.8	1680	8.1		8.1
908	7	Palmerton Location 2	7	131.6		10	10	700	7.0		7.0
916	7	Palmerton Location 2	7	131.6		10	10	1240	12.4		12.4
918	7	Palmerton Location 2	7	131.6		7.3	7.3	760	5.5		5.5
922	7	Palmerton Location 2	7	131.6		5.2	5.2	1250	6.5		6.5
917	10	Palmerton Location 4	7	248.0		17	17	790	13.4		13.4
921	10	Palmerton Location 4	7	248.0		7.3	7.3	940	6.9		6.9
939	10	Palmerton Location 4	7	248.0		2	2	3840	7.7		7.7
941	10	Palmerton Location 4	7	248.0		4	4	1590	6.4		6.4
945	10	Palmerton Location 4	7	248.0		51	51	480	24.5		24.5

Phase II Experiment 9: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume (mL/d)	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
901	2	Control	14	0		5.6	5.6	340	1.9		1.9
902	2	Control	14	0		2	2	1390	2.8		2.8
920	2	Control	14	0		2	2	1940	3.9		3.9
925	2	Control	14	0		5.5	5.5	1160	6.4		6.4
928	2	Control	14	0		2	2	1720	3.4		3.4
906	7	Palmerton Location 2	14	160.1		9	9	4340	39.1		39.1
908	7	Palmerton Location 2	14	160.1		12	12	1480	17.8		17.8
916	7	Palmerton Location 2	14	160.1		8.9	8.9	1260	11.2		11.2
918	7	Palmerton Location 2	14	160.1		19	19	1280	24.3		24.3
922	7	Palmerton Location 2	14	160.1		8	8	2800	22.4		22.4
917	10	Palmerton Location 4	14	291.7		26	26	2620	68.1		68.1
921	10	Palmerton Location 4	14	291.7		23	23	2440	56.1		56.1
939	10	Palmerton Location 4	14	291.7		6.8	6.8	13560	92.2		92.2
941	10	Palmerton Location 4	14	291.7		6.9	6.9	3560	24.6		24.6
945	10	Palmerton Location 4	14	291.7		67	67	400	26.8		26.8

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 1: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
809	1	Control	6/7	0.0		14	14	9740	136.4		136.4
828	1	Control	6/7	0.0		46	46	2240	103.0		103.0
831	1	Control	6/7	0.0		78	78	1320	103.0		103.0
826	3	Sodium Arsenate	6/7	3096.9		170	170	15340	2607.8		2607.8
827	3	Sodium Arsenate	6/7	3096.9		360	360	6690	2408.4		2408.4
835	3	Sodium Arsenate	6/7	3096.9		1200	1200	2190	2628.0		2628.0
841	3	Sodium Arsenate	6/7	3096.9		690	690	2220	1531.8		1531.8
802	4	VBI70 TM1	6/7	932.9		44	44	9490	417.6		417.6
804	4	VBI70 TM1	6/7	932.9		37	37	13210	488.8		488.8
807	4	VBI70 TM1	6/7	571.4		380	380	1050	399.0		399.0
813	4	VBI70 TM1	6/7	932.9		200	200	1900	380.0		380.0
819	5	VBI70 TM1	6/7	2203.2		73	73	9310	679.6		679.6
822	5	VBI70 TM1	6/7	2203.2		120	120	4520	542.4		542.4
834	5	VBI70 TM1	6/7	2203.2		120	120	6540	784.8		784.8
840	5	VBI70 TM1	6/7	2203.2		180	180	4290	772.2		772.2
801	6	VBI70 TM2	6/7	744.2		16	16	19790	316.6		316.6
812	6	VBI70 TM2	6/7	744.2		440	440	890	391.6		391.6
823	6	VBI70 TM2	6/7	493.0		67	67	2640	176.9		176.9
836	6	VBI70 TM2	6/7	744.2		27	27	10880	293.8		293.8
806	7	VBI70 TM2	6/7	2068.1		120	120	5610	673.2		673.2
811	7	VBI70 TM2	6/7	2068.1		180	180	4160	748.8		748.8
816	7	VBI70 TM2	6/7	1266.7		120	120	4250	510.0		510.0
820	7	VBI70 TM2	6/7	2068.1		61	61	13820	843.0		843.0
803	8	VBI70 TM3	6/7	692.9		81	81	3640	294.8		294.8
808	8	VBI70 TM3	6/7	692.9		86	86	2980	256.3		256.3
810	8	VBI70 TM3	6/7	692.9		77	77	2830	217.9		217.9
833	8	VBI70 TM3	6/7	692.9		61	61	5320	324.5		324.5
818	9	VBI70 TM3	6/7	1886.1		170	170	2300	391.0		391.0
829	9	VBI70 TM3	6/7	1886.1		180	180	2440	439.2		439.2

Phase III Experiment 1: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
830	9	VBI70 TM3	6/7	1886.1		160	160	3320	531.2		531.2
832	9	VBI70 TM3	6/7	1886.1		190	190	3790	720.1		720.1
809	1	Control	8/9	0.0		8	8	9100	72.8		72.8
828	1	Control	8/9	0.0		41	41	2860	117.3		117.3
831	1	Control	8/9	0.0		80	80	1330	106.4		106.4
826	3	Sodium Arsenate	8/9	3272.5		160	160	20320	3251.2		3251.2
827	3	Sodium Arsenate	8/9	3272.5		300	300	8300	2490.0		2490.0
835	3	Sodium Arsenate	8/9	3272.5		870	870	2970	2583.9		2583.9
841	3	Sodium Arsenate	8/9	3272.5		760	760	3860	2933.6		2933.6
802	4	VBI70 TM1	8/9	992.6		68	68	11310	769.1		769.1
804	4	VBI70 TM1	8/9	992.6		32	32	6920	221.4		221.4
807	4	VBI70 TM1	8/9	846.7		390	390	1190	464.1		464.1
813	4	VBI70 TM1	8/9	992.6		260	260	1560	405.6		405.6
819	5	VBI70 TM1	8/9	2310.0		95	95	1110	105.5		105.5
822	5	VBI70 TM1	8/9	2310.0		290	290	2680	777.2		777.2
834	5	VBI70 TM1	8/9	2310.0		130	130	7460	969.8		969.8
840	5	VBI70 TM1	8/9	2310.0		210	210	4190	879.9		879.9
801	6	VBI70 TM2	8/9	800.0		24	24	17860	428.6		428.6
812	6	VBI70 TM2	8/9	800.0		420	420	900	378.0		378.0
823	6	VBI70 TM2	8/9	682.8		130	130	2520	327.6		327.6
836	6	VBI70 TM2	8/9	800.0		36	36	11660	419.8		419.8
806	7	VBI70 TM2	8/9	2165.6		200	200	4000	800.0		800.0
811	7	VBI70 TM2	8/9	2165.6		360	360	2360	849.6		849.6
816	7	VBI70 TM2	8/9	1845.6		120	120	7120	854.4		854.4
820	7	VBI70 TM2	8/9	2165.6		65	65	15000	975.0		975.0
803	8	VBI70 TM3	8/9	734.2		59	59	5820	343.4		343.4
808	8	VBI70 TM3	8/9	734.2		110	110	3000	330.0		330.0
810	8	VBI70 TM3	8/9	734.2		98	98	3780	370.4		370.4
833	8	VBI70 TM3	8/9	734.2		56	56	6660	373.0		373.0

Phase III Experiment 1: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
818	9	VBI70 TM3	8/9	1968.7		200	200	3340	668.0		668.0
829	9	VBI70 TM3	8/9	1968.7		220	220	2480	545.6		545.6
830	9	VBI70 TM3	8/9	1968.7		290	290	2560	742.4		742.4
832	9	VBI70 TM3	8/9	1968.7		230	230	3540	814.2		814.2
809	1	Control	10/11	0.0		10	10	15100	151.0		151.0
828	1	Control	10/11	0.0		37	37	3420	126.5		126.5
831	1	Control	10/11	0.0		52	52	2430	126.4		126.4
815	2	Sodium Arsenate	10/11	1425.5		520	520	1820	946.4		946.4
821	2	Sodium Arsenate	10/11	1425.5		370	370	3700	1369.0		1369.0
825	2	Sodium Arsenate	10/11	1425.5		400	400	3840	1536.0		1536.0
842	2	Sodium Arsenate	10/11	1425.5		300	300	5000	1500.0		1500.0
826	3	Sodium Arsenate	10/11	3448.1		150	150	22360	3354.0		3354.0
827	3	Sodium Arsenate	10/11	3448.1		210	210	8320	1747.2		1747.2
835	3	Sodium Arsenate	10/11	3448.1		400	400	4360	1744.0		1744.0
841	3	Sodium Arsenate	10/11	3448.1		1100	1100	2500	2750.0		2750.0
802	4	VBI70 TM1	10/11	1052.3		11	11	7820	86.0		86.0
804	4	VBI70 TM1	10/11	1052.3		120	120	4200	504.0		504.0
807	4	VBI70 TM1	10/11	1052.3		270	270	2200	594.0		594.0
813	4	VBI70 TM1	10/11	1052.3		160	160	2300	368.0		368.0
819	5	VBI70 TM1	10/11	2416.7		110	110	3680	404.8		404.8
822	5	VBI70 TM1	10/11	2416.7		300	300	3200	960.0		960.0
834	5	VBI70 TM1	10/11	2416.7		140	140	3900	546.0		546.0
840	5	VBI70 TM1	10/11	2416.7		200	200	4820	964.0		964.0
801	6	VBI70 TM2	10/11	855.9		24	24	10300	247.2		247.2
812	6	VBI70 TM2	10/11	855.9		500	500	1000	500.0		500.0
823	6	VBI70 TM2	10/11	855.9		96	96	3360	322.6		322.6
836	6	VBI70 TM2	10/11	855.9		32	32	7660	245.1		245.1
806	7	VBI70 TM2	10/11	2263.0		250	250	2800	700.0		700.0
811	7	VBI70 TM2	10/11	2263.0		350	350	2440	854.0		854.0

Phase III Experiment 1: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
816	7	VBI70 TM2	10/11	2263.0		88	88	4020	353.8		353.8
820	7	VBI70 TM2	10/11	2263.0		65	65	14800	962.0		962.0
803	8	VBI70 TM3	10/11	775.5		55	55	6560	360.8		360.8
808	8	VBI70 TM3	10/11	775.5		94	94	3700	347.8		347.8
810	8	VBI70 TM3	10/11	775.5		53	53	7060	374.2		374.2
833	8	VBI70 TM3	10/11	775.5		64	64	6580	421.1		421.1
818	9	VBI70 TM3	10/11	2051.3		180	180	4000	720.0		720.0
829	9	VBI70 TM3	10/11	2051.3		280	280	2000	560.0		560.0
830	9	VBI70 TM3	10/11	2051.3		210	210	3100	651.0		651.0
832	9	VBI70 TM3	10/11	2051.3		220	220	2980	655.6		655.6

The following were excluded due to a dosing error. Analysis of doughball samples indicated that there was an error in the preparation of the doughballs administered to dose group 2 on study days 6–8; therefore, the data for animals in dose group 2 on days 6/7 and 8/9 were judged to be erroneous and were excluded from the analysis.

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
815	2	Sodium Arsenate	6/7	1273.0		790	790	2320	1832.8		1832.8
821	2	Sodium Arsenate	6/7	1273.0		1000	1000	2250	2250.0		2250.0
825	2	Sodium Arsenate	6/7	1273.0		950	950	3510	3334.5		3334.5
842	2	Sodium Arsenate	6/7	1273.0		920	920	2700	2484.0		2484.0
815	2	Sodium Arsenate	8/9	1349.3		920	920	1690	1554.8		1554.8
821	2	Sodium Arsenate	8/9	1349.3		1200	1200	1500	1800.0		1800.0
825	2	Sodium Arsenate	8/9	1349.3		790	790	2790	2204.1		2204.1
842	2	Sodium Arsenate	8/9	1349.3		840	840	2430	2041.2		2041.2

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
903	1	Control	6/7	0.0		18	18	4700	84.6		84.6
935	1	Control	6/7	0.0		44	44	1860	81.8		81.8
940	1	Control	6/7	0.0		77	77	960	73.9		73.9
902	2	Sodium Arsenate	6/7	903.5		380	380	2100	798.0		798.0
910	2	Sodium Arsenate	6/7	903.5		1400	1400	620	868.0		868.0
911	2	Sodium Arsenate	6/7	903.5		580	580	560	324.8		324.8
938	2	Sodium Arsenate	6/7	903.5		650	650	1320	858.0		858.0
909	3	Sodium Arsenate	6/7	2366.3		820	820	1940	1590.8		1590.8
912	3	Sodium Arsenate	6/7	2366.3		480	480	4440	2131.2		2131.2
925	3	Sodium Arsenate	6/7	2366.3		470	470	2220	1043.4		1043.4
936	3	Sodium Arsenate	6/7	2366.3		360	360	4260	1533.6		1533.6
918	4	VBI70 TM4	6/7	734.8		14	14	10740	150.4		150.4
929	4	VBI70 TM4	6/7	734.8		30	30	8600	258.0		258.0
932	4	VBI70 TM4	6/7	734.8		55	55	4520	248.6		248.6
937	4	VBI70 TM4	6/7	734.8		120	120	1380	165.6		165.6
913	5	VBI70 TM4	6/7	1869.4		130	130	2220	288.6		288.6
914	5	VBI70 TM4	6/7	1402.0		130	130	1440	187.2		187.2
919	5	VBI70 TM4	6/7	1869.4		91	91	5300	482.3		482.3
939	5	VBI70 TM4	6/7	1869.4		160	160	2100	336.0		336.0
901	6	VBI70 TM5	6/7	825.1		120	120	2320	278.4		278.4
922	6	VBI70 TM5	6/7	825.1		93	93	2300	213.9		213.9
930	6	VBI70 TM5	6/7	825.1		94	94	3100	291.4		291.4
933	6	VBI70 TM5	6/7	825.1		56	56	5640	315.8		315.8
915	7	VBI70 TM5	6/7	2140.8		55	55	5280	290.4		290.4
921	7	VBI70 TM5	6/7	2140.8		28	28	10540	295.1		295.1
924	7	VBI70 TM5	6/7	2140.8		78	78	4400	343.2		343.2
934	7	VBI70 TM5	6/7	2140.8		66	66	5460	360.4		360.4
905	8	VBI70 TM6	6/7	670.8		130	130	1840	239.2		239.2
917	8	VBI70 TM6	6/7	670.8		30	30	6220	186.6		186.6

Phase III Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
920	8	VBI70 TM6	6/7	670.8		290	290	660	191.4		191.4
927	8	VBI70 TM6	6/7	670.8		23	23	6840	157.3		157.3
904	9	VBI70 TM6	6/7	1565.9		51	51	4360	222.4		222.4
908	9	VBI70 TM6	6/7	1565.9		130	130	2640	343.2		343.2
926	9	VBI70 TM6	6/7	1565.9		120	120	1240	148.8		148.8
931	9	VBI70 TM6	6/7	1565.9		96	96	3460	332.2		332.2
903	1	Control	8/9	0.0		21	21	2240	47.0		47.0
935	1	Control	8/9	0.0		38	38	2290	87.0		87.0
940	1	Control	8/9	0.0		220	220	430	94.6		94.6
902	2	Sodium Arsenate	8/9	967.5		510	510	1020	520.2		520.2
910	2	Sodium Arsenate	8/9	967.5		1500	1500	810	1215.0		1215.0
911	2	Sodium Arsenate	8/9	967.5		550	550	650	357.5		357.5
938	2	Sodium Arsenate	8/9	967.5		1200	1200	690	828.0		828.0
909	3	Sodium Arsenate	8/9	2501.9		570	570	3640	2074.8		2074.8
912	3	Sodium Arsenate	8/9	2501.9		620	620	2980	1847.6		1847.6
925	3	Sodium Arsenate	8/9	2501.9		410	410	3330	1365.3		1365.3
936	3	Sodium Arsenate	8/9	2501.9		520	520	2920	1518.4		1518.4
918	4	VBI70 TM4	8/9	765.2		21	21	10030	210.6		210.6
929	4	VBI70 TM4	8/9	765.2		42	42	6750	283.5		283.5
932	4	VBI70 TM4	8/9	765.2		58	58	4000	232.0		232.0
937	4	VBI70 TM4	8/9	765.2		260	260	860	223.6		223.6
913	5	VBI70 TM4	8/9	1959.3		150	150	1820	273.0		273.0
914	5	VBI70 TM4	8/9	1959.3		220	220	1320	290.4		290.4
919	5	VBI70 TM4	8/9	1959.3		80	80	5420	433.6		433.6
939	5	VBI70 TM4	8/9	1959.3		210	210	1400	294.0		294.0
901	6	VBI70 TM5	8/9	868.3		110	110	1920	211.2		211.2
922	6	VBI70 TM5	8/9	868.3		87	87	2740	238.4		238.4
930	6	VBI70 TM5	8/9	868.3		76	76	2720	206.7		206.7
933	6	VBI70 TM5	8/9	868.3		50	50	5140	257.0		257.0
915	7	VBI70 TM5	8/9	2220.4		50	50	6240	312.0		312.0

Phase III Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
921	7	VBI70 TM5	8/9	2220.4		40	40	10160	406.4		406.4
924	7	VBI70 TM5	8/9	2220.4		62	62	5700	353.4		353.4
934	7	VBI70 TM5	8/9	2220.4		110	110	3200	352.0		352.0
905	8	VBI70 TM6	8/9	690.1		190	190	1200	228.0		228.0
917	8	VBI70 TM6	8/9	690.1		70	70	2600	182.0		182.0
920	8	VBI70 TM6	8/9	690.1		370	370	560	207.2		207.2
927	8	VBI70 TM6	8/9	690.1		25	25	8360	209.0		209.0
904	9	VBI70 TM6	8/9	1625.9		75	75	5540	415.5		415.5
908	9	VBI70 TM6	8/9	1625.9		260	260	1040	270.4		270.4
926	9	VBI70 TM6	8/9	1625.9		170	170	1700	289.0		289.0
931	9	VBI70 TM6	8/9	1625.9		140	140	2460	344.4		344.4
903	1	Control	10/11	0.0		21	21	5240	110.0		110.0
935	1	Control	10/11	0.0		38	38	4000	152.0		152.0
940	1	Control	10/11	0.0		71	71	580	41.2		41.2
902	2	Sodium Arsenate	10/11	1031.5		200	200	4000	800.0		800.0
910	2	Sodium Arsenate	10/11	1031.5		950	950	800	760.0		760.0
911	2	Sodium Arsenate	10/11	1031.5		200	200	2900	580.0		580.0
938	2	Sodium Arsenate	10/11	1031.5		670	670	1090	730.3		730.3
909	3	Sodium Arsenate	10/11	2637.5		750	750	2540	1905.0		1905.0
912	3	Sodium Arsenate	10/11	2637.5		450	450	3880	1746.0		1746.0
925	3	Sodium Arsenate	10/11	2637.5		180	180	10000	1800.0		1800.0
936	3	Sodium Arsenate	10/11	2637.5		170	170	4600	782.0		782.0
918	4	VBI70 TM4	10/11	795.6		21	21	12260	257.5		257.5
929	4	VBI70 TM4	10/11	795.6		46	46	5860	269.6		269.6
932	4	VBI70 TM4	10/11	795.6		29	29	8660	251.1		251.1
937	4	VBI70 TM4	10/11	795.6		210	210	880	184.8		184.8
913	5	VBI70 TM4	10/11	2049.3		170	170	2000	340.0		340.0
914	5	VBI70 TM4	10/11	1946.9		370	370	1400	518.0		518.0
919	5	VBI70 TM4	10/11	2049.3		69	69	7440	513.4		513.4
939	5	VBI70 TM4	10/11	2049.3		210	210	2000	420.0		420.0

Phase III Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
901	6	VBI70 TM5	10/11	911.4		150	150	1500	225.0		225.0
922	6	VBI70 TM5	10/11	911.4		79	79	2800	221.2		221.2
930	6	VBI70 TM5	10/11	911.4		65	65	2960	192.4		192.4
933	6	VBI70 TM5	10/11	911.4		47	47	5040	236.9		236.9
915	7	VBI70 TM5	10/11	2300.0		59	59	5800	342.2		342.2
921	7	VBI70 TM5	10/11	2300.0		34	34	16000	544.0		544.0
924	7	VBI70 TM5	10/11	2300.0		54	54	7100	383.4		383.4
934	7	VBI70 TM5	10/11	2300.0		100	100	4260	426.0		426.0
905	8	VBI70 TM6	10/11	709.5		110	110	1800	198.0		198.0
917	8	VBI70 TM6	10/11	709.5		93	93	1660	154.4		154.4
920	8	VBI70 TM6	10/11	709.5		180	180	1300	234.0		234.0
927	8	VBI70 TM6	10/11	709.5		20	20	10420	208.4		208.4
904	9	VBI70 TM6	10/11	1685.8		67	67	6400	428.8		428.8
908	9	VBI70 TM6	10/11	1685.8		150	150	3200	480.0		480.0
926	9	VBI70 TM6	10/11	1475.1		140	140	3140	439.6		439.6
931	9	VBI70 TM6	10/11	1685.8		95	95	4000	380.0		380.0
The following data (day -1) are from 24-hour urine collections, not 48.											
903	1	Control	-1	0.0		11	11	800	8.8		8.8
935	1	Control	-1	0.0		36	36	400	14.4		14.4
940	1	Control	-1	0.0		130	130	124	16.1		16.1
902	2	Sodium Arsenate	-1	0.0		69	69	198	13.7		13.7
910	2	Sodium Arsenate	-1	0.0		41	41	126	5.2		5.2
911	2	Sodium Arsenate	-1	0.0		32	32	400	12.8		12.8
938	2	Sodium Arsenate	-1	0.0		150	150	142	21.3		21.3
909	3	Sodium Arsenate	-1	0.0		34	34	800	27.2		27.2
912	3	Sodium Arsenate	-1	0.0		13	13	1400	18.2		18.2
925	3	Sodium Arsenate	-1	0.0		39	39	400	15.6		15.6
936	3	Sodium Arsenate	-1	0.0		11	11	800	8.8		8.8

Phase III Experiment 2: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
918	4	VBI70 TM4	-1	0.0		81	81	2200	178.2		178.2
929	4	VBI70 TM4	-1	0.0		41	41	3200	131.2		131.2
932	4	VBI70 TM4	-1	0.0		22	22	800	17.6		17.6
937	4	VBI70 TM4	-1	0.0		150	150	107	16.1		16.1
913	5	VBI70 TM4	-1	0.0		33	33	400	13.2		13.2
914	5	VBI70 TM4	-1	0.0		68	68	200	13.6		13.6
919	5	VBI70 TM4	-1	0.0		10	10	1200	12.0		12.0
939	5	VBI70 TM4	-1	0.0		10	10	1200	12.0		12.0
901	6	VBI70 TM5	-1	0.0		51	51	400	20.4		20.4
922	6	VBI70 TM5	-1	0.0		18	18	1400	25.2		25.2
930	6	VBI70 TM5	-1	0.0		18	18	600	10.8		10.8
933	6	VBI70 TM5	-1	0.0		29	29	800	23.2		23.2
915	7	VBI70 TM5	-1	0.0		14	14	1600	22.4		22.4
921	7	VBI70 TM5	-1	0.0		12	12	2000	24.0		24.0
924	7	VBI70 TM5	-1	0.0		9	9	2800	25.2		25.2
934	7	VBI70 TM5	-1	0.0		7	7	2000	14.0		14.0
905	8	VBI70 TM6	-1	0.0		62	62	400	24.8		24.8
917	8	VBI70 TM6	-1	0.0		4	4	2000	8.0		8.0
920	8	VBI70 TM6	-1	0.0		110	110	108	11.9		11.9
927	8	VBI70 TM6	-1	0.0		18	18	600	10.8		10.8
904	9	VBI70 TM6	-1	0.0		10	10	800	8.0		8.0
908	9	VBI70 TM6	-1	0.0		83	83	192	15.9		15.9
926	9	VBI70 TM6	-1	0.0		30	30	600	18.0		18.0
931	9	VBI70 TM6	-1	0.0		4	4	2400	9.6		9.6

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 3: Urinary Arsenic Data and Urine Volumes

					Digestion Method 2						Digestion Method 1						
Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
108	1	Control	6/7	0.0		2	2	9580	19.2		19.2	<	1	0.5	9580	4.8		4.8
145	1	Control	6/7	0.0		2	2	4640	9.3		9.3		2	2	4640	9.3		9.3
157	1	Control	6/7	0.0		2	2	10100	20.2		20.2		2	2	10100	20.2		20.2
122	2	Sodium Arsenate	6/7	600.0		82	82	6980	572.4		572.4		21	21	6980	146.6		146.6
123	2	Sodium Arsenate	6/7	600.0		20	20	24780	495.6		495.6		6.7	6.7	24780	166.0		166.0
147	2	Sodium Arsenate	6/7	600.0		68	68	4880	331.8		331.8		28	28	4880	136.6		136.6
156	2	Sodium Arsenate	6/7	600.0		73	73	5120	373.8		373.8		21	21	5120	107.5		107.5
101	3	Sodium Arsenate	6/7	1200.0		71	71	14360	1019.6		1019.6		18	18	14360	258.5		258.5
115	3	Sodium Arsenate	6/7	1200.0		30	30	35820	1074.6		1074.6		11	11	35820	394.0		394.0
119	3	Sodium Arsenate	6/7	1200.0		370	370	3000	1110.0		1110.0		85	85	3000	255.0		255.0
151	3	Sodium Arsenate	6/7	1200.0		300	300	3620	1086.0		1086.0		56	56	3620	202.7		202.7
121	4	Sodium Arsenate	6/7	1800.0		370	370	8420	3115.4		3115.4		84	84	8420	707.3		707.3
136	4	Sodium Arsenate	6/7	1800.0		71	71	2364	167.8		167.8		20	20	2364	47.3		47.3
140	4	Sodium Arsenate	6/7	1800.0		150	150	9840	1476.0		1476.0		43	43	9840	423.1		423.1
148	4	Sodium Arsenate	6/7	1800.0		180	180	12360	2224.8		2224.8		41	41	12360	506.8		506.8
104	5	Butte TM1	6/7	610.4		23	23	3700	85.1		85.1		5.1	5.1	3700	18.9		18.9
106	5	Butte TM1	6/7	610.4		19	19	3720	70.7		70.7		5.8	5.8	3720	21.6		21.6
128	5	Butte TM1	6/7	610.4		13	13	7820	101.7		101.7		5.3	5.3	7820	41.4		41.4
155	5	Butte TM1	6/7	610.4		23	23	3920	90.2		90.2		7.2	7.2	3920	28.2		28.2
103	6	Butte TM1	6/7	1220.9		16	16	9740	155.8		155.8		3.6	3.6	9740	35.1		35.1
110	6	Butte TM1	6/7	1220.9		22	22	8100	178.2		178.2		6	6	8100	48.6		48.6
116	6	Butte TM1	6/7	1220.9		15	15	14000	210.0		210.0		4.4	4.4	14000	61.6		61.6
142	6	Butte TM1	6/7	1220.9		12	12	14000	168.0		168.0		3.6	3.6	14000	50.4		50.4
120	7	Butte TM1	6/7	1831.3		41	41	5720	234.5		234.5		12	12	5720	68.6		68.6
125	7	Butte TM1	6/7	1831.3		24	24	15590	374.2		374.2		8	8	15590	124.7		124.7
138	7	Butte TM1	6/7	1831.3		35	35	6960	243.6		243.6		12	12	6960	83.5		83.5
150	7	Butte TM1	6/7	1831.3		25	25	10200	255.0		255.0		8.5	8.5	10200	86.7		86.7
102	8	Butte TM2	6/7	600.0		19	19	4640	88.2		88.2		6.2	6.2	4640	28.8		28.8
114	8	Butte TM2	6/7	600.0		15	15	8520	127.8		127.8		3.6	3.6	8520	30.7		30.7
117	8	Butte TM2	6/7	600.0		12	12	10560	126.7		126.7		3.4	3.4	10560	35.9		35.9
126	8	Butte TM2	6/7	600.0		5.4	5.4	20640	111.5		111.5		2	2	20640	41.3		41.3
112	9	Butte TM2	6/7	1200.0		35	35	8700	304.5		304.5		9.3	9.3	8700	80.9		80.9
113	9	Butte TM2	6/7	1200.0		19	19	11040	209.8		209.8		5.4	5.4	11040	59.6		59.6
135	9	Butte TM2	6/7	1200.0		18	18	6940	124.9		124.9		5	5	6940	34.7		34.7

Phase III Experiment 3: Urinary Arsenic Data and Urine Volumes

					Digestion Method 2						Digestion Method 1						
Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
154	9	Butte TM2	6/7	1200.0		67	67	2300	154.1		154.1		22	22	2300	50.6		50.6
124	10	Butte TM2	6/7	1800.0		96	96	3800	364.8		364.8		27	27	3800	102.6		102.6
133	10	Butte TM2	6/7	1800.0		60	60	7200	432.0		432.0		17	17	7200	122.4		122.4
158	10	Butte TM2	6/7	1800.0		140	140	1940	271.6		271.6		41	41	1940	79.5		79.5
160	10	Butte TM2	6/7	1800.0		69	69	7240	499.6		499.6		20	20	7240	144.8		144.8
108	1	Control	8/9	0.0		2	2	4800	9.6		9.6	<	1	0.5	4800	2.4		2.4
145	1	Control	8/9	0.0		3	3	5000	15.0		15.0	<	1	0.5	5000	2.5		2.5
157	1	Control	8/9	0.0		2	2	7500	15.0		15.0	<	1	0.5	7500	3.8		3.8
122	2	Sodium Arsenate	8/9	600.0		82	82	7000	574.0		574.0		23	23	7000	161.0		161.0
123	2	Sodium Arsenate	8/9	600.0		18	18	28600	514.8		514.8		4.7	4.7	28600	134.4		134.4
147	2	Sodium Arsenate	8/9	600.0		51	51	9000	459.0		459.0	Sample Lost						
156	2	Sodium Arsenate	8/9	600.0		80	80	4800	384.0		384.0		26	26	4800	124.8		124.8
101	3	Sodium Arsenate	8/9	1200.0		31	31	3470	107.6		107.6		6.9	6.9	3470	23.9		23.9
115	3	Sodium Arsenate	8/9	1200.0		37	37	35600	1317.2		1317.2		10	10	35600	356.0		356.0
119	3	Sodium Arsenate	8/9	1200.0		270	270	3800	1026.0		1026.0		75	75	3800	285.0		285.0
151	3	Sodium Arsenate	8/9	1200.0		230	230	4500	1035.0		1035.0		65	65	4500	292.5		292.5
121	4	Sodium Arsenate	8/9	1800.0		130	130	1400	182.0		182.0		33	33	1400	46.2		46.2
136	4	Sodium Arsenate	8/9	1800.0		110	110	14800	1628.0		1628.0		30	30	14800	444.0		444.0
140	4	Sodium Arsenate	8/9	1800.0		140	140	11800	1652.0		1652.0		37	37	11800	436.6		436.6
148	4	Sodium Arsenate	8/9	1800.0		130	130	14900	1937.0		1937.0		33	33	14900	491.7		491.7
104	5	Butte TM1	8/9	610.4		17	17	6400	108.8		108.8		3.6	3.6	6400	23.0		23.0
106	5	Butte TM1	8/9	610.4		16	16	6200	99.2		99.2		6.9	6.9	6200	42.8		42.8
128	5	Butte TM1	8/9	610.4		14	14	10600	148.4		148.4		6.2	6.2	10600	65.7		65.7
155	5	Butte TM1	8/9	610.4		17	17	5600	95.2		95.2		6.6	6.6	5600	37.0		37.0
103	6	Butte TM1	8/9	1220.9		19	19	9700	184.3		184.3		6.2	6.2	9700	60.1		60.1
110	6	Butte TM1	8/9	1220.9		28	28	8600	240.8		240.8		8.2	8.2	8600	70.5		70.5
116	6	Butte TM1	8/9	1220.9		15	15	15600	234.0		234.0		4.3	4.3	15600	67.1		67.1
142	6	Butte TM1	8/9	1220.9		27	27	7800	210.6		210.6		9.7	9.7	7800	75.7		75.7
120	7	Butte TM1	8/9	1831.3	Sample Lost							Sample Lost						
125	7	Butte TM1	8/9	1831.3		19	19	21200	402.8		402.8		6.4	6.4	21200	135.7		135.7
138	7	Butte TM1	8/9	1831.3		84	84	3100	260.4		260.4		22	22	3100	68.2		68.2
150	7	Butte TM1	8/9	1831.3		34	34	8400	285.6		285.6		13	13	8400	109.2		109.2
102	8	Butte TM2	8/9	600.0		15	15	6200	93.0		93.0		4	4	6200	24.8		24.8
114	8	Butte TM2	8/9	600.0		15	15	11000	165.0		165.0		3.3	3.3	11000	36.3		36.3

Phase III Experiment 3: Urinary Arsenic Data and Urine Volumes

					Digestion Method 2						Digestion Method 1						
Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
117	8	Butte TM2	8/9	600.0		12	12	11000	132.0		132.0		3.8	3.8	11000	41.8		41.8
126	8	Butte TM2	8/9	600.0		6.5	6.5	29600	192.4		192.4		2	2	29600	59.2		59.2
112	9	Butte TM2	8/9	1200.0		25	25	11400	285.0		285.0		6.7	6.7	11400	76.4		76.4
113	9	Butte TM2	8/9	1200.0		18	18	1600	28.8		28.8		6.3	6.3	1600	10.1		10.1
135	9	Butte TM2	8/9	1200.0		37	37	9400	347.8		347.8		8.8	8.8	9400	82.7		82.7
154	9	Butte TM2	8/9	1200.0		28	28	7800	218.4		218.4		8.1	8.1	7800	63.2		63.2
124	10	Butte TM2	8/9	1800.0		80	80	5400	432.0		432.0		23	23	5400	124.2		124.2
133	10	Butte TM2	8/9	1800.0		58	58	7200	417.6		417.6		18	18	7200	129.6		129.6
158	10	Butte TM2	8/9	1395.0		62	62	4800	297.6		297.6		20	20	4800	96.0		96.0
160	10	Butte TM2	8/9	1800.0		57	57	7800	444.6		444.6		17	17	7800	132.6		132.6
108	1	Control	10/11	0.0		1.8	1.8	13600	24.5		24.5	<	1	0.5	13600	6.8	x	
145	1	Control	10/11	0.0		2	2	5800	11.6		11.6	<	1	0.5	5800	2.9		2.9
157	1	Control	10/11	0.0		2	2	6400	12.8		12.8	<	1	0.5	6400	3.2		3.2
122	2	Sodium Arsenate	10/11	600.0		89	89	6200	551.8		551.8		31	31	6200	192.2		192.2
123	2	Sodium Arsenate	10/11	600.0		20	20	28200	564.0		564.0		7.1	7.1	28200	200.2		200.2
147	2	Sodium Arsenate	10/11	600.0		80	80	5800	464.0		464.0		23	23	5800	133.4		133.4
156	2	Sodium Arsenate	10/11	600.0		87	87	4500	391.5		391.5		26	26	4500	117.0		117.0
101	3	Sodium Arsenate	10/11	1200.0		21	21	59500	1249.5		1249.5		5.9	5.9	59500	351.1		351.1
115	3	Sodium Arsenate	10/11	1200.0		36	36	35200	1267.2		1267.2		12	12	35200	422.4		422.4
119	3	Sodium Arsenate	10/11	1200.0		400	400	2780	1112.0		1112.0		110	110	2780	305.8		305.8
151	3	Sodium Arsenate	10/11	1200.0		190	190	6500	1235.0		1235.0		46	46	6500	299.0		299.0
121	4	Sodium Arsenate	10/11	1800.0		140	140	16000	2240.0		2240.0		25	25	16000	400.0		400.0
136	4	Sodium Arsenate	10/11	1800.0		120	120	14200	1704.0		1704.0		32	32	14200	454.4		454.4
140	4	Sodium Arsenate	10/11	1800.0		110	110	14840	1632.4		1632.4		32	32	14840	474.9		474.9
148	4	Sodium Arsenate	10/11	1800.0		140	140	10200	1428.0		1428.0		45	45	10200	459.0		459.0
102	8	Butte TM2	10/11	600.0		16	16	5200	83.2		83.2		4.3	4.3	5200	22.4		22.4
114	8	Butte TM2	10/11	600.0		19	19	9200	174.8		174.8		5.8	5.8	9200	53.4		53.4
117	8	Butte TM2	10/11	600.0		7.7	7.7	17800	137.1		137.1		3	3	17800	53.4		53.4
126	8	Butte TM2	10/11	600.0		5.4	5.4	42860	231.4		231.4		2	2	42860	85.7		85.7
112	9	Butte TM2	10/11	1200.0		25	25	13000	325.0		325.0		8.1	8.1	13000	105.3		105.3
113	9	Butte TM2	10/11	1200.0		19	19	16600	315.4		315.4		4.4	4.4	16600	73.0		73.0
135	9	Butte TM2	10/11	1200.0		5.9	5.9	14000	82.6		82.6		2	2	14000	28.0		28.0
154	9	Butte TM2	10/11	1200.0		40	40	6800	272.0		272.0		13	13	6800	88.4		88.4
124	10	Butte TM2	10/11	1800.0		33	33	6400	211.2		211.2		11	11	6400	70.4		70.4

Phase III Experiment 3: Urinary Arsenic Data and Urine Volumes

					Digestion Method 2						Digestion Method 1					
Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
133	10	Butte TM2	10/11	1800.0		49	49	8600	421.4		421.4		15	15	8600	129.0		129.0
158	10	Butte TM2	10/11	1800.0		96	96	4300	412.8		412.8		26	26	4300	111.8		111.8
160	10	Butte TM2	10/11	1800.0		47	47	7600	357.2		357.2		14	14	7600	106.4		106.4
Due to a shortage of ButteTM1, dosing ended a day earlier for groups 5–7 and the final urine collection for these groups was over 24 hours instead of 48. The doses for these groups (5–7) on day 10 represent the appropriate 24-hour dose.																		
104	5	Butte TM1	10	305.2		19	19	2700	51.3		51.3		5.1	5.1	2700	13.8		13.8
106	5	Butte TM1	10	305.2		23	23	2400	55.2		55.2		6.1	6.1	2400	14.6		14.6
155	5	Butte TM1	10	305.2		20	20	3200	64.0		64.0		5.9	5.9	3200	18.9		18.9
128	5	Butte TM1	10	305.2	Sample Lost								3.9	3.9	5000	19.5		19.5
103	6	Butte TM1	10	610.4		21	21	4200	88.2		88.2		6.5	6.5	4200	27.3		27.3
110	6	Butte TM1	10	610.4		32	32	3200	102.4		102.4		11	11	3200	35.2		35.2
116	6	Butte TM1	10	610.4		17	17	6500	110.5		110.5		5	5	6500	32.5		32.5
142	6	Butte TM1	10	610.4		35	35	3100	108.5		108.5		12	12	3100	37.2		37.2
120	7	Butte TM1	10	915.7		45	45	3500	157.5		157.5		12	12	3500	42.0		42.0
125	7	Butte TM1	10	915.7		15	15	14600	219.0		219.0		4.5	4.5	14600	65.7		65.7
138	7	Butte TM1	10	915.7		120	120	1200	144.0		144.0		33	33	1200	39.6		39.6
150	7	Butte TM1	10	915.7		23	23	6000	138.0		138.0		6.2	6.2	6000	37.2		37.2

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 4: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
324	1	Control	6/7	0.0	<	1	0.5	5400	2.7		2.7
338	1	Control	6/7	0.0		1	1	6960	7.0		7.0
349	1	Control	6/7	0.0		3	3	6100	18.3		18.3
326	2	Sodium Arsenate	6/7	600.0		83	83	6870	570.2		570.2
330	2	Sodium Arsenate	6/7	600.0		160	160	3060	489.6		489.6
339	2	Sodium Arsenate	6/7	600.0		29	29	19330	560.6		560.6
350	2	Sodium Arsenate	6/7	600.0		45	45	12850	578.3		578.3
310	3	Sodium Arsenate	6/7	1200.0		110	110	11150	1226.5		1226.5
316	3	Sodium Arsenate	6/7	1200.0		49	49	24060	1178.9		1178.9
322	3	Sodium Arsenate	6/7	1200.0		73	73	16940	1236.6		1236.6
340	3	Sodium Arsenate	6/7	1200.0		160	160	4840	774.4		774.4
303	4	Sodium Arsenate	6/7	1800.0		170	170	10270	1745.9		1745.9
315	4	Sodium Arsenate	6/7	1800.0		101	101	12220	1234.2		1234.2
329	4	Sodium Arsenate	6/7	1800.0		70	70	21400	1498.0		1498.0
341	4	Sodium Arsenate	6/7	1800.0		300	300	5540	1662.0		1662.0
301	5	Aberjona River TM1	6/7	515.6		56	56	3360	188.2		188.2
318	5	Aberjona River TM1	6/7	515.6		42	42	4960	208.3		208.3
344	5	Aberjona River TM1	6/7	515.6		57	57	3440	196.1		196.1
347	5	Aberjona River TM1	6/7	515.6		14	14	10700	149.8		149.8
309	6	Aberjona River TM1	6/7	1031.2		24	24	18340	440.2		440.2
327	6	Aberjona River TM1	6/7	1031.2		66	66	6280	414.5		414.5
343	6	Aberjona River TM1	6/7	1031.2		36	36	7040	253.4		253.4
346	6	Aberjona River TM1	6/7	1031.2		23	23	22050	507.2		507.2
306	7	Aberjona River TM1	6/7	1546.8		65	65	8220	534.3		534.3
308	7	Aberjona River TM1	6/7	1546.8		39	39	15500	604.5		604.5
317	7	Aberjona River TM1	6/7	1546.8		138	138	2520	347.8		347.8
331	7	Aberjona River TM1	6/7	1527.5		42	42	8180	343.6		343.6
304	8	Aberjona River TM2	6/7	539.3		49	49	5660	277.3		277.3
311	8	Aberjona River TM2	6/7	539.3		11	11	23820	262.0		262.0
314	8	Aberjona River TM2	6/7	539.3		44	44	6000	264.0		264.0
321	8	Aberjona River TM2	6/7	539.3		25	25	10300	257.5		257.5

Phase III Experiment 4: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
307	9	Aberjona River TM2	6/7	1011.2		40	40	17000	680.0		680.0
313	9	Aberjona River TM2	6/7	1078.6		23	23	24830	571.1		571.1
325	9	Aberjona River TM2	6/7	1038.2		104	104	4360	453.4		453.4
332	9	Aberjona River TM2	6/7	1078.6		66	66	8910	588.1		588.1
328	10	Aberjona River TM2	6/7	1617.9		56	56	15700	879.2		879.2
337	10	Aberjona River TM2	6/7	1577.5		160	160	3320	531.2		531.2
342	10	Aberjona River TM2	6/7	1597.7		57	57	14000	798.0		798.0
348	10	Aberjona River TM2	6/7	1597.7		150	150	3680	552.0		552.0
324	1	Control	8/9	0.0		2	2	6780	13.6		13.6
338	1	Control	8/9	0.0		3	3	7280	21.8		21.8
349	1	Control	8/9	0.0		3.6	3.6	4340	15.6		15.6
326	2	Sodium Arsenate	8/9	600.0		75	75	7640	573.0		573.0
330	2	Sodium Arsenate	8/9	600.0		270	270	1900	513.0		513.0
339	2	Sodium Arsenate	8/9	600.0		73	73	8320	607.4		607.4
350	2	Sodium Arsenate	8/9	600.0		71	71	7640	542.4		542.4
310	3	Sodium Arsenate	8/9	1200.0		240	240	3260	782.4		782.4
316	3	Sodium Arsenate	8/9	1200.0		24	24	50480	1211.5		1211.5
322	3	Sodium Arsenate	8/9	1200.0		130	130	8720	1133.6		1133.6
340	3	Sodium Arsenate	8/9	1200.0		240	240	3480	835.2		835.2
303	4	Sodium Arsenate	8/9	1800.0		140	140	12800	1792.0		1792.0
315	4	Sodium Arsenate	8/9	1800.0		70	70	23700	1659.0		1659.0
329	4	Sodium Arsenate	8/9	1800.0		83	83	21620	1794.5		1794.5
341	4	Sodium Arsenate	8/9	1800.0		240	240	7260	1742.4		1742.4
301	5	Aberjona River TM1	8/9	515.6		77	77	2240	172.5		172.5
318	5	Aberjona River TM1	8/9	515.6		48	48	4830	231.8		231.8
344	5	Aberjona River TM1	8/9	515.6		39	39	4380	170.8		170.8
347	5	Aberjona River TM1	8/9	515.6		19	19	10740	204.1		204.1
309	6	Aberjona River TM1	8/9	1031.2		29	29	16790	486.9		486.9
327	6	Aberjona River TM1	8/9	1031.2		65	65	6360	413.4		413.4
343	6	Aberjona River TM1	8/9	1005.4		60	60	4480	268.8		268.8
346	6	Aberjona River TM1	8/9	1031.2		24	24	15820	379.7		379.7

Phase III Experiment 4: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
306	7	Aberjona River TM1	8/9	1546.8		66	66	8220	542.5		542.5
308	7	Aberjona River TM1	8/9	1546.8		51	51	11400	581.4		581.4
317	7	Aberjona River TM1	8/9	1546.8		160	160	2350	376.0		376.0
331	7	Aberjona River TM1	8/9	1546.8		58	58	8680	503.4		503.4
304	8	Aberjona River TM2	8/9	539.3		39	39	6600	257.4		257.4
311	8	Aberjona River TM2	8/9	539.3		11	11	23920	263.1		263.1
314	8	Aberjona River TM2	8/9	539.3		52	52	5250	273.0		273.0
321	8	Aberjona River TM2	8/9	539.3		19	19	14600	277.4		277.4
307	9	Aberjona River TM2	8/9	1078.6		28	28	21760	609.3		609.3
313	9	Aberjona River TM2	8/9	1078.6		32	32	16420	525.4		525.4
325	9	Aberjona River TM2	8/9	1051.7		98	98	4840	474.3		474.3
332	9	Aberjona River TM2	8/9	1078.6		80	80	6760	540.8		540.8
328	10	Aberjona River TM2	8/9	1597.7		63	63	14470	911.6		911.6
337	10	Aberjona River TM2	8/9	1557.3		440	440	1400	616.0		616.0
342	10	Aberjona River TM2	8/9	1617.9		54	54	14200	766.8		766.8
348	10	Aberjona River TM2	8/9	1617.9		190	190	3840	729.6		729.6
324	1	Control	10/11	0.0	<	1	0.5	11620	5.8	x	
338	1	Control	10/11	0.0		1	1	13800	13.8		13.8
349	1	Control	10/11	0.0		3	3	4460	13.4		13.4
326	2	Sodium Arsenate	10/11	600.0		40	40	14940	597.6		597.6
330	2	Sodium Arsenate	10/11	600.0		130	130	3350	435.5		435.5
339	2	Sodium Arsenate	10/11	600.0		33	33	18380	606.5		606.5
350	2	Sodium Arsenate	10/11	600.0		60	60	10100	606.0		606.0
310	3	Sodium Arsenate	10/11	1200.0		74	74	14060	1040.4		1040.4
316	3	Sodium Arsenate	10/11	1200.0		31	31	40840	1266.0		1266.0
322	3	Sodium Arsenate	10/11	1200.0		100	100	12400	1240.0		1240.0
340	3	Sodium Arsenate	10/11	1200.0		120	120	8100	972.0		972.0
303	4	Sodium Arsenate	10/11	1800.0		96	96	13490	1295.0		1295.0
315	4	Sodium Arsenate	10/11	1800.0		102	102	16150	1647.3		1647.3
329	4	Sodium Arsenate	10/11	1800.0		68	68	26660	1812.9		1812.9
341	4	Sodium Arsenate	10/11	1800.0		180	180	8990	1618.2		1618.2

Phase III Experiment 4: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
301	5	Aberjona River TM1	10/11	515.6		110	110	2020	222.2		222.2
318	5	Aberjona River TM1	10/11	515.6		58	58	3440	199.5		199.5
344	5	Aberjona River TM1	10/11	515.6		43	43	4010	172.4		172.4
347	5	Aberjona River TM1	10/11	515.6		13	13	11690	152.0		152.0
309	6	Aberjona River TM1	10/11	1031.2		24	24	19700	472.8		472.8
327	6	Aberjona River TM1	10/11	1031.2		40	40	9800	392.0		392.0
343	6	Aberjona River TM1	10/11	979.6		28	28	9240	258.7		258.7
346	6	Aberjona River TM1	10/11	1031.2		24	24	16650	399.6		399.6
306	7	Aberjona River TM1	10/11	1546.8		51	51	11620	592.6		592.6
308	7	Aberjona River TM1	10/11	1546.8		52	52	12200	634.4		634.4
317	7	Aberjona River TM1	10/11	1546.8		190	190	2150	408.5		408.5
331	7	Aberjona River TM1	10/11	1450.1		54	54	11180	603.7		603.7
304	8	Aberjona River TM2	10/11	539.3		62	62	4440	275.3		275.3
311	8	Aberjona River TM2	10/11	539.3		9.5	9.5	29080	276.3		276.3
314	8	Aberjona River TM2	10/11	539.3		50	50	4660	233.0		233.0
321	8	Aberjona River TM2	10/11	539.3		32	32	7440	238.1		238.1
307	9	Aberjona River TM2	10/11	1078.6		31	31	18000	558.0		558.0
313	9	Aberjona River TM2	10/11	1078.6		33	33	14660	483.8		483.8
325	9	Aberjona River TM2	10/11	1078.6		120	120	4050	486.0		486.0
332	9	Aberjona River TM2	10/11	1078.6		120	120	4290	514.8		514.8
328	10	Aberjona River TM2	10/11	1617.9		39	39	21760	848.6		848.6
337	10	Aberjona River TM2	10/11	1435.9		160	160	3800	608.0		608.0
342	10	Aberjona River TM2	10/11	1617.9		26	26	33350	867.1		867.1
348	10	Aberjona River TM2	10/11	1617.9		130	130	4800	624.0		624.0

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
84	1	Control	0	0.0		3	3	910	2.7		2.7
91	1	Control	0	0.0		6.9	6.9	220	1.5		1.5
1550	1	Control	0	0.0		4.4	4.4	800	3.5		3.5
76	2	Sodium Arsenate	0	338.5		260	260	1010	262.6		262.6
90	2	Sodium Arsenate	0	338.5		83	83	3140	260.6		260.6
1542	2	Sodium Arsenate	0	338.5		120	120	2260	271.2		271.2
1547	2	Sodium Arsenate	0	338.5		150	150	1440	216.0		216.0
1562	2	Sodium Arsenate	0	338.5		92	92	2640	242.9		242.9
70	3	Sodium Arsenate	0	655.0		240	240	1880	451.2		451.2
73	3	Sodium Arsenate	0	655.0		170	170	3050	518.5		518.5
81	3	Sodium Arsenate	0	655.0		190	190	3050	579.5		579.5
1541	3	Sodium Arsenate	0	655.0		120	120	3020	362.4		362.4
1556	3	Sodium Arsenate	0	655.0		170	170	3120	530.4		530.4
64	4	El Paso TM1	0	549.2		68	68	3000	204.0		204.0
77	4	El Paso TM1	0	549.2		260	260	640	166.4		166.4
80	4	El Paso TM1	0	549.2		96	96	2380	228.5		228.5
92	4	El Paso TM1	0	549.2		76	76	2560	194.6		194.6
1548	4	El Paso TM1	0	549.2		140	140	1320	184.8		184.8
87	5	El Paso TM1	0	1045.6		70	70	4740	331.8		331.8
97	5	El Paso TM1	0	1045.6		260	260	820	213.2		213.2
1543	5	El Paso TM1	0	1045.6		63	63	3200	201.6		201.6
1546	5	El Paso TM1	0	1045.6		300	300	970	291.0		291.0
1553	5	El Paso TM1	0	1045.6		210	210	1820	382.2		382.2
66	6	El Paso TM1	0	2180.8		1200	1200	720	864.0		864.0
68	6	El Paso TM1	0	2180.8		730	730	1070	781.1		781.1
86	6	El Paso TM1	0	2180.8		410	410	1400	574.0		574.0
1545	6	El Paso TM1	0	2180.8		750	750	820	615.0		615.0
1561	6	El Paso TM1	0	2180.8		110	110	7020	772.2		772.2
69	7	El Paso TM2	0	549.6		150	150	900	135.0		135.0

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
75	7	El Paso TM2	0	549.6		60	60	2520	151.2		151.2
78	7	El Paso TM2	0	549.6		120	120	1420	170.4		170.4
98	7	El Paso TM2	0	549.6		71	71	2740	194.5		194.5
1564	7	El Paso TM2	0	549.6		110	110	980	107.8		107.8
88	8	El Paso TM2	0	487.6		86	86	500	43.0		43.0
89	8	El Paso TM2	0	975.2		67	67	2680	179.6		179.6
99	8	El Paso TM2	0	731.4		170	170	240	40.8		40.8
100	8	El Paso TM2	0	975.2		55	55	5840	321.2		321.2
1563	8	El Paso TM2	0	975.2		120	120	1950	234.0		234.0
65	9	El Paso TM2	0	2067.2		490	490	980	480.2		480.2
82	9	El Paso TM2	0	2067.2		500	500	1000	500.0		500.0
95	9	El Paso TM2	0	1550.4		150	150	2200	330.0		330.0
1549	9	El Paso TM2	0	1808.8		59	59	4220	249.0		249.0
1558	9	El Paso TM2	0	2067.2		590	590	960	566.4		566.4
84	1	Control	5	0.0		5.3	5.3	540	2.9		2.9
91	1	Control	5	0.0		7.6	7.6	420	3.2		3.2
1550	1	Control	5	0.0		2	2	5200	10.4		10.4
76	2	Sodium Arsenate	5	375.0		520	520	630	327.6		327.6
90	2	Sodium Arsenate	5	375.0		140	140	2040	285.6		285.6
1542	2	Sodium Arsenate	5	375.0		80	80	4900	392.0		392.0
1547	2	Sodium Arsenate	5	375.0		140	140	2310	323.4		323.4
1562	2	Sodium Arsenate	5	375.0		110	110	3220	354.2		354.2
70	3	Sodium Arsenate	5	733.5		190	190	3580	680.2		680.2
73	3	Sodium Arsenate	5	733.5		220	220	3060	673.2		673.2
81	3	Sodium Arsenate	5	733.5		270	270	2800	756.0		756.0
1541	3	Sodium Arsenate	5	733.5		110	110	5220	574.2		574.2
1556	3	Sodium Arsenate	5	733.5		92	92	6920	636.6		636.6
64	4	El Paso TM1	5	614.0		62	62	6300	390.6		390.6
77	4	El Paso TM1	5	614.0		96	96	2770	265.9		265.9
80	4	El Paso TM1	5	614.0		44	44	6680	293.9		293.9

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
92	4	El Paso TM1	5	614.0		120	120	2340	280.8		280.8
1548	4	El Paso TM1	5	614.0		160	160	1470	235.2		235.2
87	5	El Paso TM1	5	1176.0		97	97	7400	717.8		717.8
97	5	El Paso TM1	5	1176.0		250	250	1210	302.5		302.5
1543	5	El Paso TM1	5	1176.0		140	140	3020	422.8		422.8
1546	5	El Paso TM1	5	1176.0		220	220	1760	387.2		387.2
1553	5	El Paso TM1	5	1176.0		130	130	3000	390.0		390.0
66	6	El Paso TM1	5	2459.2		1080	1080	730	788.4		788.4
68	6	El Paso TM1	5	2459.2		650	650	1520	988.0		988.0
86	6	El Paso TM1	5	2459.2		390	390	2440	951.6		951.6
1545	6	El Paso TM1	5	2459.2		690	690	1290	890.1		890.1
1561	6	El Paso TM1	5	2459.2		240	240	4900	1176.0		1176.0
69	7	El Paso TM2	5	604.4		87	87	1740	151.4		151.4
75	7	El Paso TM2	5	604.4		120	120	1390	166.8		166.8
78	7	El Paso TM2	5	604.4		180	180	1200	216.0		216.0
98	7	El Paso TM2	5	604.4		110	110	1340	147.4		147.4
1564	7	El Paso TM2	5	604.4		89	89	2330	207.4		207.4
88	8	El Paso TM2	5	1070.4		220	220	1330	292.6		292.6
89	8	El Paso TM2	5	1070.4		120	120	2420	290.4		290.4
99	8	El Paso TM2	5	1070.4		530	530	520	275.6		275.6
100	8	El Paso TM2	5	1070.4		54	54	7900	426.6		426.6
1563	8	El Paso TM2	5	1070.4		160	160	2650	424.0		424.0
65	9	El Paso TM2	5	2305.6		1100	1100	610	671.0		671.0
82	9	El Paso TM2	5	2305.6		590	590	1100	649.0		649.0
95	9	El Paso TM2	5	2305.6		370	370	2560	947.2		947.2
1549	9	El Paso TM2	5	2305.6		220	220	3160	695.2		695.2
1558	9	El Paso TM2	5	2305.6		680	680	1220	829.6		829.6
84	1	Control	8	0.0		5.3	5.3	720	3.8		3.8
91	1	Control	8	0.0		4.8	4.8	720	3.5		3.5
1550	1	Control	8	0.0		3	3	3700	11.1		11.1

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
76	2	Sodium Arsenate	8	396.8		260	260	1380	358.8		358.8
90	2	Sodium Arsenate	8	396.8		120	120	3720	446.4		446.4
1542	2	Sodium Arsenate	8	396.8		44	44	9700	426.8		426.8
1547	2	Sodium Arsenate	8	396.8		110	110	2720	299.2		299.2
1562	2	Sodium Arsenate	8	396.8		99	99	2980	295.0		295.0
70	3	Sodium Arsenate	8	783.0		110	110	5280	580.8		580.8
73	3	Sodium Arsenate	8	783.0		100	100	6380	638.0		638.0
81	3	Sodium Arsenate	8	783.0		140	140	4080	571.2		571.2
1541	3	Sodium Arsenate	8	783.0		160	160	4440	710.4		710.4
1556	3	Sodium Arsenate	8	783.0		63	63	6880	433.4		433.4
64	4	El Paso TM1	8	644.8	<	1	0.5	3720	1.9		1.9
77	4	El Paso TM1	8	644.8		37	37	6740	249.4		249.4
80	4	El Paso TM1	8	644.8		77	77	4600	354.2		354.2
92	4	El Paso TM1	8	644.8		100	100	2300	230.0		230.0
1548	4	El Paso TM1	8	644.8		110	110	980	107.8		107.8
87	5	El Paso TM1	8	1254.4		150	150	4000	600.0		600.0
97	5	El Paso TM1	8	1254.4		180	180	1260	226.8		226.8
1543	5	El Paso TM1	8	1254.4		92	92	6190	569.5		569.5
1546	5	El Paso TM1	8	1254.4		63	63	6900	434.7		434.7
1553	5	El Paso TM1	8	1254.4		200	200	2680	536.0		536.0
66	6	El Paso TM1	8	2505.4		850	850	1280	1088.0		1088.0
68	6	El Paso TM1	8	2505.4		700	700	1320	924.0		924.0
86	6	El Paso TM1	8	2505.4		330	330	2260	745.8		745.8
1545	6	El Paso TM1	8	2569.6		430	430	2340	1006.2		1006.2
1561	6	El Paso TM1	8	2569.6		130	130	9060	1177.8		1177.8
69	7	El Paso TM2	8	634.8		97	97	1920	186.2		186.2
75	7	El Paso TM2	8	634.8		55	55	4400	242.0		242.0
78	7	El Paso TM2	8	618.9		110	110	2180	239.8		239.8
98	7	El Paso TM2	8	634.8		66	66	2920	192.7		192.7
1564	7	El Paso TM2	8	634.8		49	49	4800	235.2		235.2

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
88	8	El Paso TM2	8	1124.0		140	140	1640	229.6		229.6
89	8	El Paso TM2	8	1124.0		98	98	3200	313.6		313.6
99	8	El Paso TM2	8	1124.0		360	360	1120	403.2		403.2
100	8	El Paso TM2	8	1124.0		47	47	10240	481.3		481.3
1563	8	El Paso TM2	8	1124.0		91	91	3320	302.1		302.1
65	9	El Paso TM2	8	2526.4		550	550	1540	847.0		847.0
82	9	El Paso TM2	8	2526.4		520	520	1840	956.8		956.8
95	9	El Paso TM2	8	2526.4		210	210	4200	882.0		882.0
1549	9	El Paso TM2	8	2526.4		130	130	6060	787.8		787.8
1558	9	El Paso TM2	8	2526.4		650	650	1400	910.0		910.0
84	1	Control	11	0.0		4.1	4.1	720	3.0		3.0
91	1	Control	11	0.0		3	3	1200	3.6		3.6
1550	1	Control	11	0.0		1	1	17600	17.6		17.6
76	2	Sodium Arsenate	11	426.3		320	320	1100	352.0		352.0
90	2	Sodium Arsenate	11	426.3		36	36	9240	332.6		332.6
1542	2	Sodium Arsenate	11	426.3		48	48	8800	422.4		422.4
1547	2	Sodium Arsenate	11	426.3		120	120	2320	278.4		278.4
1562	2	Sodium Arsenate	11	426.3		120	120	2840	340.8		340.8
70	3	Sodium Arsenate	11	831.0		99	99	7320	724.7		724.7
73	3	Sodium Arsenate	11	831.0		130	130	3700	481.0		481.0
81	3	Sodium Arsenate	11	831.0		140	140	6320	884.8		884.8
1541	3	Sodium Arsenate	11	831.0		220	220	3140	690.8		690.8
1556	3	Sodium Arsenate	11	831.0		130	130	5680	738.4		738.4
64	4	El Paso TM1	11	696.4		11	11	21140	232.5		232.5
77	4	El Paso TM1	11	696.4		63	63	4500	283.5		283.5
80	4	El Paso TM1	11	696.4		110	110	3540	389.4		389.4
92	4	El Paso TM1	11	696.4		110	110	2580	283.8		283.8
1548	4	El Paso TM1	11	696.4		12	12	11060	132.7		132.7
87	5	El Paso TM1	11	1344.8		70	70	8800	616.0		616.0
97	5	El Paso TM1	11	1344.8		94	94	5460	513.2		513.2

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
1543	5	El Paso TM1	11	1344.8		90	90	6000	540.0		540.0
1546	5	El Paso TM1	11	1344.8		120	120	1480	177.6		177.6
1553	5	El Paso TM1	11	1344.8		180	180	2400	432.0		432.0
66	6	El Paso TM1	11	2676.7		390	390	2700	1053.0		1053.0
68	6	El Paso TM1	11	2676.7		350	350	2420	847.0		847.0
86	6	El Paso TM1	11	2747.2		49	49	6740	330.3		330.3
1545	6	El Paso TM1	11	2606.3		480	480	2740	1315.2		1315.2
1561	6	El Paso TM1	11	2817.6		28	28	17100	478.8		478.8
69	7	El Paso TM2	11	654.4		99	99	1840	182.2		182.2
75	7	El Paso TM2	11	671.2		46	46	2720	125.1		125.1
78	7	El Paso TM2	11	671.2		130	130	1840	239.2		239.2
98	7	El Paso TM2	11	671.2		58	58	5580	323.6		323.6
1564	7	El Paso TM2	11	671.2		36	36	6080	218.9		218.9
88	8	El Paso TM2	11	1232.0		180	180	2400	432.0		432.0
89	8	El Paso TM2	11	1232.0		96	96	4000	384.0		384.0
99	8	El Paso TM2	11	1232.0		280	280	1420	397.6		397.6
100	8	El Paso TM2	11	1232.0		77	77	6400	492.8		492.8
1563	8	El Paso TM2	11	1232.0		53	53	8960	474.9		474.9
65	9	El Paso TM2	11	2779.2		330	330	2440	805.2		805.2
82	9	El Paso TM2	11	2709.7		690	690	1940	1338.6		1338.6
95	9	El Paso TM2	11	2779.2		230	230	4340	998.2		998.2
1549	9	El Paso TM2	11	2779.2		160	160	6300	1008.0		1008.0
1558	9	El Paso TM2	11	2779.2		380	380	920	349.6		349.6
84	1	Control	14	0.0		3	3	1540	4.6		4.6
91	1	Control	14	0.0		5.5	5.5	620	3.4		3.4
1550	1	Control	14	0.0		1	1	7680	7.7		7.7
76	2	Sodium Arsenate	14	460.5		120	120	3440	412.8		412.8
90	2	Sodium Arsenate	14	460.5		71	71	6580	467.2		467.2
1542	2	Sodium Arsenate	14	460.5		54	54	8060	435.2		435.2
1547	2	Sodium Arsenate	14	460.5		91	91	4500	409.5		409.5

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
1562	2	Sodium Arsenate	14	460.5		81	81	5080	411.5		411.5
70	3	Sodium Arsenate	14	897.0		120	120	6740	808.8		808.8
73	3	Sodium Arsenate	14	897.0		190	190	4700	893.0		893.0
81	3	Sodium Arsenate	14	897.0		84	84	8300	697.2		697.2
1541	3	Sodium Arsenate	14	897.0		140	140	4760	666.4		666.4
1556	3	Sodium Arsenate	14	897.0		92	92	9700	892.4		892.4
64	4	El Paso TM1	14	748.8		33	33	17000	561.0		561.0
77	4	El Paso TM1	14	748.8		61	61	5800	353.8		353.8
80	4	El Paso TM1	14	748.8		750	750	5000	3750.0		3750.0
92	4	El Paso TM1	14	748.8		69	69	3100	213.9		213.9
1548	4	El Paso TM1	14	748.8		51	51	6840	348.8		348.8
87	5	El Paso TM1	14	1450.4		19	19	16920	321.5		321.5
97	5	El Paso TM1	14	1450.4		28	28	11300	316.4		316.4
1543	5	El Paso TM1	14	1450.4		92	92	6940	638.5		638.5
1546	5	El Paso TM1	14	1450.4		180	180	3820	687.6		687.6
1553	5	El Paso TM1	14	1450.4		140	140	5860	820.4		820.4
66	6	El Paso TM1	14	3051.2		520	520	3000	1560.0		1560.0
68	6	El Paso TM1	14	3051.2		380	380	4000	1520.0		1520.0
86	6	El Paso TM1	14	3051.2		54	54	12080	652.3		652.3
1545	6	El Paso TM1	14	3051.2		120	120	10300	1236.0		1236.0
1561	6	El Paso TM1	14	3051.2		51	51	22880	1166.9		1166.9
69	7	El Paso TM2	14	722.8		44	44	5340	235.0		235.0
75	7	El Paso TM2	14	722.8		31	31	8000	248.0		248.0
78	7	El Paso TM2	14	722.8		120	120	1900	228.0		228.0
98	7	El Paso TM2	14	722.8		80	80	2660	212.8		212.8
1564	7	El Paso TM2	14	722.8		36	36	7200	259.2		259.2
88	8	El Paso TM2	14	1156.0		65	65	4100	266.5		266.5
89	8	El Paso TM2	14	1360.0		99	99	4280	423.7		423.7
99	8	El Paso TM2	14	1360.0		190	190	2740	520.6		520.6
100	8	El Paso TM2	14	1360.0		45	45	10060	452.7		452.7

Phase III Experiment 5: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Day	Arsenic Dose (µg/d)	Q	Urine As Conc. µg/L	Adj Urine Conc.* (µg/L)	Urine Volume mL/d	Total Arsenic Excreted µg/d	Unreliable?	Final Values (Arsenic Excreted, µg/d)
1563	8	El Paso TM2	14	1360.0		90	90	5040	453.6		453.6
65	9	El Paso TM2	14	3091.2		180	180	6000	1080.0		1080.0
82	9	El Paso TM2	14	3091.2		690	690	1520	1048.8		1048.8
95	9	El Paso TM2	14	3091.2		120	120	2840	340.8		340.8
1549	9	El Paso TM2	14	3091.2		110	110	7540	829.4		829.4
1558	9	El Paso TM2	14	3091.2		190	190	4760	904.4		904.4

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 6: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
1313	1	Control	-2/-1	0.0		3	3	2540	7.6		7.6
1322	1	Control	-2/-1	0.0		4.8	4.8	1460	7.0		7.0
1324	1	Control	-2/-1	0.0		7.8	7.8	1220	9.5		9.5
1354	1	Control	-2/-1	0.0		2	2	2380	4.8		4.8
1366	1	Control	-2/-1	0.0		3.4	3.4	2320	7.9		7.9
1311	2	Sodium Arsenate	-2/-1	0.0		2	2	13430	26.9		26.9
1317	2	Sodium Arsenate	-2/-1	0.0		4.4	4.4	1990	8.8		8.8
1325	2	Sodium Arsenate	-2/-1	0.0		3	3	2800	8.4		8.4
1353	2	Sodium Arsenate	-2/-1	0.0		2	2	2920	5.8		5.8
1372	2	Sodium Arsenate	-2/-1	0.0		4.6	4.6	3210	14.8		14.8
1312	3	Sodium Arsenate	-2/-1	0.0		2	2	1340	2.7		2.7
1318	3	Sodium Arsenate	-2/-1	0.0		4.3	4.3	1640	7.1		7.1
1319	3	Sodium Arsenate	-2/-1	0.0		2	2	4940	9.9		9.9
1323	3	Sodium Arsenate	-2/-1	0.0		4.7	4.7	1080	5.1		5.1
1355	3	Sodium Arsenate	-2/-1	0.0		1	1	10000	10.0		10.0
1321	4	ACC Utility Pole Soil	-2/-1	0.0		7.8	7.8	920	7.2		7.2
1351	4	ACC Utility Pole Soil	-2/-1	0.0		2	2	8820	17.6		17.6
1369	4	ACC Utility Pole Soil	-2/-1	0.0		3	3	2620	7.9		7.9
1374	4	ACC Utility Pole Soil	-2/-1	0.0		2	2	11290	22.6		22.6
1375	4	ACC Utility Pole Soil	-2/-1	0.0		6.2	6.2	1700	10.5		10.5
1315	5	ACC Utility Pole Soil	-2/-1	0.0		6.4	6.4	915	5.9		5.9
1356	5	ACC Utility Pole Soil	-2/-1	0.0		2	2	2680	5.4		5.4
1361	5	ACC Utility Pole Soil	-2/-1	0.0		9.2	9.2	760	7.0		7.0
1363	5	ACC Utility Pole Soil	-2/-1	0.0		2	2	3900	7.8		7.8
1365	5	ACC Utility Pole Soil	-2/-1	0.0		5.5	5.5	840	4.6		4.6
1313	1	Control	8/9	0.0		2	2	5500	11.0		11.0
1322	1	Control	8/9	0.0		2	2	2680	5.4		5.4
1324	1	Control	8/9	0.0		2	2	3560	7.1		7.1
1354	1	Control	8/9	0.0		3	3	4220	12.7		12.7

Phase III Experiment 6: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
1366	1	Control	8/9	0.0		5.3	5.3	1250	6.6		6.6
1311	2	Sodium Arsenate	8/9	790.8		65	65	10430	678.0		678.0
1317	2	Sodium Arsenate	8/9	790.8		380	380	1520	577.6		577.6
1325	2	Sodium Arsenate	8/9	790.8		64	64	9960	637.4		637.4
1353	2	Sodium Arsenate	8/9	790.8		330	330	2510	828.3		828.3
1372	2	Sodium Arsenate	8/9	790.8		135	135	4840	653.4		653.4
1312	3	Sodium Arsenate	8/9	1527.6		850	850	1490	1266.5		1266.5
1318	3	Sodium Arsenate	8/9	1527.6		1300	1300	860	1118.0		1118.0
1319	3	Sodium Arsenate	8/9	1527.6		71	71	14620	1038.0		1038.0
1323	3	Sodium Arsenate	8/9	1527.6		350	350	3210	1123.5		1123.5
1355	3	Sodium Arsenate	8/9	1527.6		96	96	13160	1263.4		1263.4
1321	4	ACC Utility Pole Soil	8/9	1246.4		150	150	3320	498.0		498.0
1351	4	ACC Utility Pole Soil	8/9	1246.4		53	53	8610	456.3		456.3
1369	4	ACC Utility Pole Soil	8/9	1246.4		27	27	13520	365.0		365.0
1374	4	ACC Utility Pole Soil	8/9	1246.4		59	59	8340	492.1		492.1
1375	4	ACC Utility Pole Soil	8/9	1246.4		170	170	2800	476.0		476.0
1315	5	ACC Utility Pole Soil	8/9	2455.0		430	430	1100	473.0		473.0
1356	5	ACC Utility Pole Soil	8/9	2455.0		210	210	4000	840.0		840.0
1361	5	ACC Utility Pole Soil	8/9	2455.0		370	370	1050	388.5		388.5
1363	5	ACC Utility Pole Soil	8/9	2455.0		250	250	4250	1062.5		1062.5
1365	5	ACC Utility Pole Soil	8/9	2455.0		300	300	3330	999.0		999.0
1313	1	Control	10/11	0.0	<	1	0.5	8840	4.4		4.4
1322	1	Control	10/11	0.0		3.5	3.5	3140	11.0		11.0
1324	1	Control	10/11	0.0		2	2	3260	6.5		6.5
1354	1	Control	10/11	0.0		32	32	5160	165.1		165.1
1366	1	Control	10/11	0.0		5	5	1410	7.1		7.1
1311	2	Sodium Arsenate	10/11	828.0		51	51	14000	714.0		714.0
1317	2	Sodium Arsenate	10/11	828.0		410	410	1550	635.5		635.5
1325	2	Sodium Arsenate	10/11	828.0		60	60	10070	604.2		604.2

Phase III Experiment 6: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
1353	2	Sodium Arsenate	10/11	828.0		170	170	4620	785.4		785.4
1372	2	Sodium Arsenate	10/11	828.0		150	150	5540	831.0		831.0
1312	3	Sodium Arsenate	10/11	1603.2		640	640	1210	774.4		774.4
1318	3	Sodium Arsenate	10/11	1603.2		980	980	1140	1117.2		1117.2
1319	3	Sodium Arsenate	10/11	1603.2		71	71	20740	1472.5		1472.5
1323	3	Sodium Arsenate	10/11	1603.2		370	370	3020	1117.4		1117.4
1355	3	Sodium Arsenate	10/11	1603.2		53	53	11420	605.3		605.3
1321	4	ACC Utility Pole Soil	10/11	1295.7		200	200	2020	404.0		404.0
1351	4	ACC Utility Pole Soil	10/11	1295.7		27	27	20180	544.9		544.9
1369	4	ACC Utility Pole Soil	10/11	1295.7		39	39	11280	439.9		439.9
1374	4	ACC Utility Pole Soil	10/11	1295.7		43	43	12950	556.9		556.9
1375	4	ACC Utility Pole Soil	10/11	1295.7		110	110	3600	396.0		396.0
1315	5	ACC Utility Pole Soil	10/11	2571.1		440	440	2080	915.2		915.2
1356	5	ACC Utility Pole Soil	10/11	2571.1		130	130	7510	976.3		976.3
1361	5	ACC Utility Pole Soil	10/11	2571.1		860	860	1120	963.2		963.2
1363	5	ACC Utility Pole Soil	10/11	2571.1		190	190	4200	798.0		798.0
1365	5	ACC Utility Pole Soil	10/11	2571.1		300	300	3680	1104.0		1104.0
1313	1	Control	6/7	0.0	Urine Volume Measurements Lost						
1322	1	Control	6/7	0.0							
1324	1	Control	6/7	0.0							
1354	1	Control	6/7	0.0							
1366	1	Control	6/7	0.0							
1311	2	Sodium Arsenate	6/7	753.6							
1317	2	Sodium Arsenate	6/7	753.6							
1325	2	Sodium Arsenate	6/7	753.6							
1353	2	Sodium Arsenate	6/7	753.6							
1372	2	Sodium Arsenate	6/7	753.6							
1312	3	Sodium Arsenate	6/7	1452.0							

Phase III Experiment 6: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
1318	3	Sodium Arsenate	6/7	1452.0							
1319	3	Sodium Arsenate	6/7	1452.0							
1323	3	Sodium Arsenate	6/7	1452.0							
1355	3	Sodium Arsenate	6/7	1452.0							
1321	4	ACC Utility Pole Soil	6/7	1197.1							
1351	4	ACC Utility Pole Soil	6/7	1197.1							
1369	4	ACC Utility Pole Soil	6/7	1197.1							
1374	4	ACC Utility Pole Soil	6/7	1197.1							
1375	4	ACC Utility Pole Soil	6/7	1197.1							
1315	5	ACC Utility Pole Soil	6/7	2339.0							
1356	5	ACC Utility Pole Soil	6/7	2339.0							
1361	5	ACC Utility Pole Soil	6/7	2339.0							
1363	5	ACC Utility Pole Soil	6/7	2339.0							
1365	5	ACC Utility Pole Soil	6/7	2339.0							

*Non-detects were adjusted to on-half the detection limit.

Phase III Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
260	1	Control	-2/-1	0.0		3	3	4600	13.8		13.8
262	1	Control	-2/-1	0.0		1	1	5520	5.5		5.5
264	1	Control	-2/-1	0.0		3	3	2240	6.7		6.7
274	1	Control	-2/-1	0.0		2	2	8980	18.0		18.0
970	1	Control	-2/-1	0.0	<	1	0.5	4150	2.1		2.1
265	2	Sodium Arsenate	-2/-1	0.0		3.6	3.6	3200	11.5		11.5
268	2	Sodium Arsenate	-2/-1	0.0		3.2	3.2	2540	8.1		8.1
561	2	Sodium Arsenate	-2/-1	0.0		2	2	13040	26.1		26.1
564	2	Sodium Arsenate	-2/-1	0.0		5.4	5.4	1200	6.5		6.5
572	2	Sodium Arsenate	-2/-1	0.0		5	5	1480	7.4		7.4
254	3	Sodium Arsenate	-2/-1	0.0		1	1	5420	5.4		5.4
275	3	Sodium Arsenate	-2/-1	0.0		3.1	3.1	1990	6.2		6.2
563	3	Sodium Arsenate	-2/-1	0.0		3.1	3.1	2870	8.9		8.9
569	3	Sodium Arsenate	-2/-1	0.0		2	2	5280	10.6		10.6
962	3	Sodium Arsenate	-2/-1	0.0		3.1	3.1	3150	9.8		9.8
263	4	ACC Dislodgeable Arsenic	-2/-1	0.0		2	2	5200	10.4		10.4
273	4	ACC Dislodgeable Arsenic	-2/-1	0.0		2	2	3380	6.8		6.8
557	4	ACC Dislodgeable Arsenic	-2/-1	0.0		3	3	6800	20.4		20.4
566	4	ACC Dislodgeable Arsenic	-2/-1	0.0		4.3	4.3	2400	10.3		10.3
964	4	ACC Dislodgeable Arsenic	-2/-1	0.0		2	2	3000	6.0		6.0
261	5	ACC Dislodgeable Arsenic	-2/-1	0.0		5.3	5.3	1700	9.0		9.0
959	5	ACC Dislodgeable Arsenic	-2/-1	0.0		3.5	3.5	5160	18.1		18.1
965	5	ACC Dislodgeable Arsenic	-2/-1	0.0		3	3	5020	15.1		15.1
969	5	ACC Dislodgeable Arsenic	-2/-1	0.0		1	1	6160	6.2		6.2
971	5	ACC Dislodgeable Arsenic	-2/-1	0.0		4.1	4.1	2440	10.0		10.0
271	6	ACC Dislodgeable Arsenic	-2/-1	0.0		3.2	3.2	2860	9.2		9.2
565	6	ACC Dislodgeable Arsenic	-2/-1	0.0		3.8	3.8	6920	26.3		26.3
567	6	ACC Dislodgeable Arsenic	-2/-1	0.0		5.4	5.4	1420	7.7		7.7
960	6	ACC Dislodgeable Arsenic	-2/-1	0.0		1	1	5820	5.8		5.8

Phase III Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
967	6	ACC Dislodgeable Arsenic	-2/-1	0.0		2	2	4540	9.1		9.1
260	1	Control	6/7	0.0		1	1	3320	3.3		3.3
262	1	Control	6/7	0.0		1	1	4100	4.1		4.1
264	1	Control	6/7	0.0	<	2	1	2620	2.6		2.6
274	1	Control	6/7	0.0		2	2	3600	7.2		7.2
970	1	Control	6/7	0.0		2	2	3360	6.7		6.7
265	2	Sodium Arsenate	6/7	695.4		110	110	5140	565.4		565.4
268	2	Sodium Arsenate	6/7	695.4		170	170	3440	584.8		584.8
561	2	Sodium Arsenate	6/7	695.4		18	18	15340	276.1		276.1
564	2	Sodium Arsenate	6/7	695.4		300	300	1660	498.0		498.0
572	2	Sodium Arsenate	6/7	695.4		440	440	1200	528.0		528.0
254	3	Sodium Arsenate	6/7	1255.2		160	160	6600	1056.0		1056.0
275	3	Sodium Arsenate	6/7	1255.2		500	500	1380	690.0		690.0
563	3	Sodium Arsenate	6/7	1255.2		240	240	2400	576.0		576.0
569	3	Sodium Arsenate	6/7	1255.2		330	330	3140	1036.2		1036.2
962	3	Sodium Arsenate	6/7	1255.2		190	190	6040	1147.6		1147.6
263	4	ACC Dislodgeable Arsenic	6/7	673.2		18	18	7880	141.8		141.8
273	4	ACC Dislodgeable Arsenic	6/7	673.2		55	55	3100	170.5		170.5
557	4	ACC Dislodgeable Arsenic	6/7	673.2		7.9	7.9	17640	139.4		139.4
566	4	ACC Dislodgeable Arsenic	6/7	673.2		61	61	1540	93.9		93.9
964	4	ACC Dislodgeable Arsenic	6/7	673.2	<	1	0.5	4580	2.3		2.3
261	5	ACC Dislodgeable Arsenic	6/7	1344.0		270	270	900	243.0		243.0
959	5	ACC Dislodgeable Arsenic	6/7	1344.0		17	17	7500	127.5		127.5
965	5	ACC Dislodgeable Arsenic	6/7	1344.0		72	72	3700	266.4		266.4
969	5	ACC Dislodgeable Arsenic	6/7	1344.0		44	44	7400	325.6		325.6
971	5	ACC Dislodgeable Arsenic	6/7	1344.0		170	170	1480	251.6		251.6
271	6	ACC Dislodgeable Arsenic	6/7	2637.6		240	240	3000	720.0		720.0
565	6	ACC Dislodgeable Arsenic	6/7	2637.6		101	101	5600	565.6		565.6
567	6	ACC Dislodgeable Arsenic	6/7	2637.6		200	200	2840	568.0		568.0

Phase III Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
960	6	ACC Dislodgeable Arsenic	6/7	2637.6		100	100	6200	620.0		620.0
967	6	ACC Dislodgeable Arsenic	6/7	2637.6		150	150	4200	630.0		630.0
260	1	Control	8/9	0.0		2	2	4120	8.2		8.2
262	1	Control	8/9	0.0		1	1	4900	4.9		4.9
264	1	Control	8/9	0.0		3	3	3620	10.9		10.9
274	1	Control	8/9	0.0		2	2	4620	9.2		9.2
970	1	Control	8/9	0.0		2	2	5340	10.7		10.7
265	2	Sodium Arsenate	8/9	724.8		110	110	5940	653.4		653.4
268	2	Sodium Arsenate	8/9	724.8		180	180	2900	522.0		522.0
561	2	Sodium Arsenate	8/9	724.8		51	51	13220	674.2		674.2
564	2	Sodium Arsenate	8/9	724.8		360	360	1760	633.6		633.6
572	2	Sodium Arsenate	8/9	724.8		170	170	3520	598.4		598.4
254	3	Sodium Arsenate	8/9	1318.2		150	150	7540	1131.0		1131.0
275	3	Sodium Arsenate	8/9	1318.2		630	630	1620	1020.6		1020.6
563	3	Sodium Arsenate	8/9	1318.2		160	160	6740	1078.4		1078.4
569	3	Sodium Arsenate	8/9	1318.2		220	220	5220	1148.4		1148.4
962	3	Sodium Arsenate	8/9	1318.2		230	230	5060	1163.8		1163.8
263	4	ACC Dislodgeable Arsenic	8/9	702.0		18	18	7200	129.6		129.6
273	4	ACC Dislodgeable Arsenic	8/9	702.0		79	79	2400	189.6		189.6
557	4	ACC Dislodgeable Arsenic	8/9	702.0		12	12	13180	158.2		158.2
566	4	ACC Dislodgeable Arsenic	8/9	702.0		78	78	2000	156.0		156.0
964	4	ACC Dislodgeable Arsenic	8/9	702.0		40	40	3720	148.8		148.8
261	5	ACC Dislodgeable Arsenic	8/9	1405.2		310	310	980	303.8		303.8
959	5	ACC Dislodgeable Arsenic	8/9	1405.2		48	48	5600	268.8		268.8
965	5	ACC Dislodgeable Arsenic	8/9	1405.2		79	79	3890	307.3		307.3
969	5	ACC Dislodgeable Arsenic	8/9	1405.2		41	41	7780	319.0		319.0
971	5	ACC Dislodgeable Arsenic	8/9	1405.2		150	150	920	138.0		138.0
271	6	ACC Dislodgeable Arsenic	8/9	2751.6		200	200	2140	428.0		428.0
565	6	ACC Dislodgeable Arsenic	8/9	2751.6		110	110	5640	620.4		620.4

Phase III Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
567	6	ACC Dislodgeable Arsenic	8/9	2751.6		112	112	5360	600.3		600.3
960	6	ACC Dislodgeable Arsenic	8/9	2751.6		84	84	8120	682.1		682.1
967	6	ACC Dislodgeable Arsenic	8/9	2751.6		190	190	4220	801.8		801.8
260	1	Control	10/11	0.0		2	2	9500	19.0		19.0
262	1	Control	10/11	0.0		2	2	4400	8.8		8.8
264	1	Control	10/11	0.0		2	2	4920	9.8		9.8
274	1	Control	10/11	0.0		1	1	2860	2.9		2.9
970	1	Control	10/11	0.0	<	1	0.5	7760	3.9		3.9
265	2	Sodium Arsenate	10/11	754.2		95	95	5600	532.0		532.0
268	2	Sodium Arsenate	10/11	754.2		150	150	4200	630.0		630.0
561	2	Sodium Arsenate	10/11	754.2		42	42	21100	886.2		886.2
564	2	Sodium Arsenate	10/11	754.2		450	450	1520	684.0		684.0
572	2	Sodium Arsenate	10/11	754.2		150	150	4400	660.0		660.0
254	3	Sodium Arsenate	10/11	1381.2		130	130	8200	1066.0		1066.0
275	3	Sodium Arsenate	10/11	1381.2		440	440	2320	1020.8		1020.8
563	3	Sodium Arsenate	10/11	1381.2		270	270	4940	1333.8		1333.8
569	3	Sodium Arsenate	10/11	1381.2		190	190	7280	1383.2		1383.2
962	3	Sodium Arsenate	10/11	1381.2		190	190	6040	1147.6		1147.6
263	4	ACC Dislodgeable Arsenic	10/11	730.8		21	21	8620	181.0		181.0
273	4	ACC Dislodgeable Arsenic	10/11	730.8		65	65	2800	182.0		182.0
557	4	ACC Dislodgeable Arsenic	10/11	730.8		13	13	10760	139.9		139.9
566	4	ACC Dislodgeable Arsenic	10/11	730.8		100	100	1820	182.0		182.0
964	4	ACC Dislodgeable Arsenic	10/11	730.8		42	42	4860	204.1		204.1
261	5	ACC Dislodgeable Arsenic	10/11	1466.4		310	310	980	303.8		303.8
959	5	ACC Dislodgeable Arsenic	10/11	1466.4		32	32	7780	249.0		249.0
965	5	ACC Dislodgeable Arsenic	10/11	1466.4		77	77	3000	231.0		231.0
969	5	ACC Dislodgeable Arsenic	10/11	1466.4		20	20	7080	141.6		141.6
971	5	ACC Dislodgeable Arsenic	10/11	1466.4		200	200	1620	324.0		324.0
271	6	ACC Dislodgeable Arsenic	10/11	2865.6		200	200	3660	732.0		732.0

Phase III Experiment 7: Urinary Arsenic Data and Urine Volumes

Pig#	Group	Material	Urine Collection Days	Arsenic Dose (µg/48 hours)	Q	Urine As Conc. (µg/L)	Adj Urine Conc.* (µg/L)	Urine Volume (mL/48 hours)	Total Arsenic Excreted (µg/48 hours)	Unreliable?	Final Values (Arsenic Excreted, µg/48 hours)
565	6	ACC Dislodgeable Arsenic	10/11	2865.6		110	110	6060	666.6		666.6
567	6	ACC Dislodgeable Arsenic	10/11	2865.6		130	130	5680	738.4		738.4
960	6	ACC Dislodgeable Arsenic	10/11	2865.6		87	87	7740	673.4		673.4
967	6	ACC Dislodgeable Arsenic	10/11	2865.6		160	160	4400	704.0		704.0

*Non-detects were adjusted to on-half the detection limit.

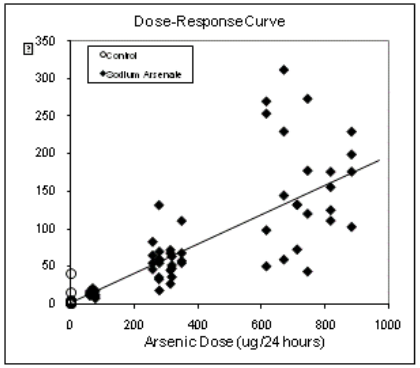
APPENDIX E

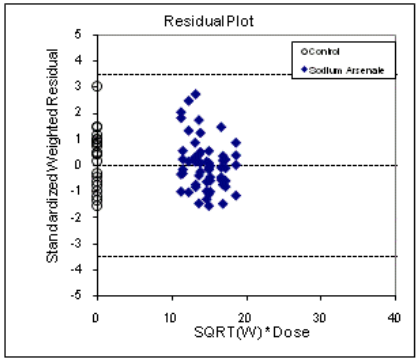
DETAILED DATA FITTING AND RBA CALCULATIONS

TABLE OF CONTENTS

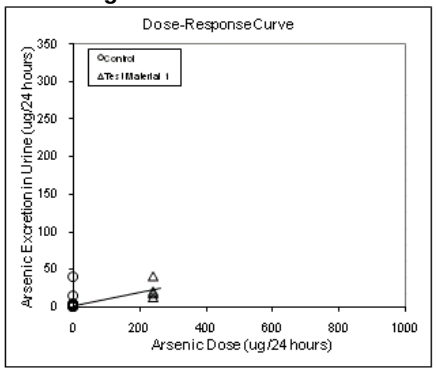
Figure 1a - All Data
Phase II Experiment 2
Day 7

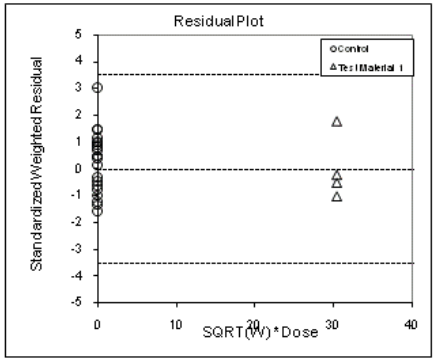
Reference Material
Sodium Arsenate*





Test Material 1
Bingham Creek Channel Soil





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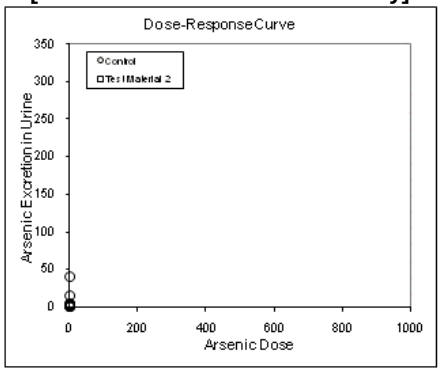

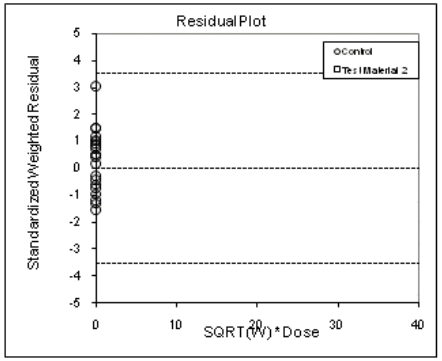

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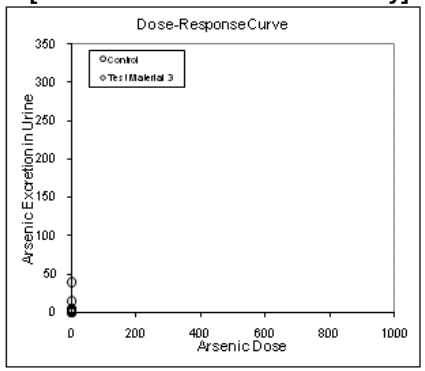

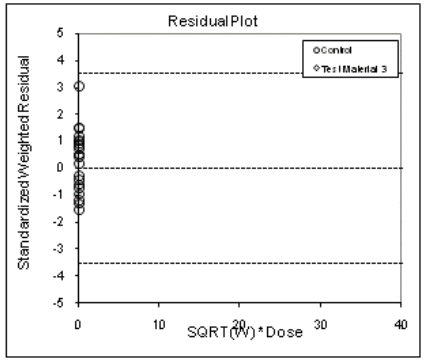

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Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.09	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0032	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	82	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	508.66	2	254.33
Error	148.65	81	1.84
Total	657.31	83	7.92

Statistic	Estimate
F	138.588
p	< 0.001
Adjusted R^2	0.7683

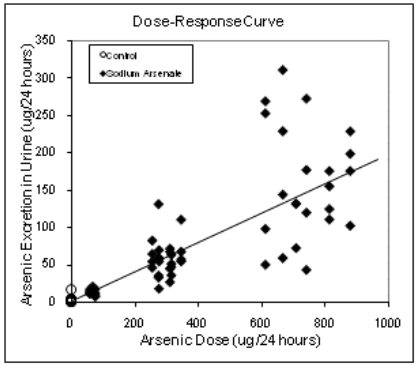
RBA and Uncertainty

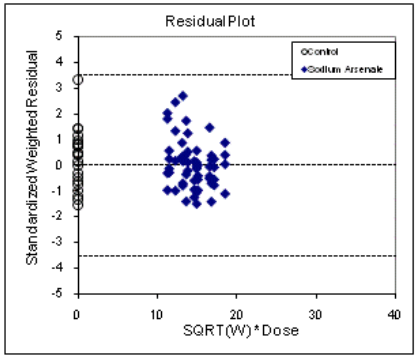
	Test Material 1	Test Material 2	Test Material 3
RBA	0.45	–	–
Lower bound[b]	0.26	–	–
Upper bound[b]	0.65	–	–
Standard Error[b]	0.117	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

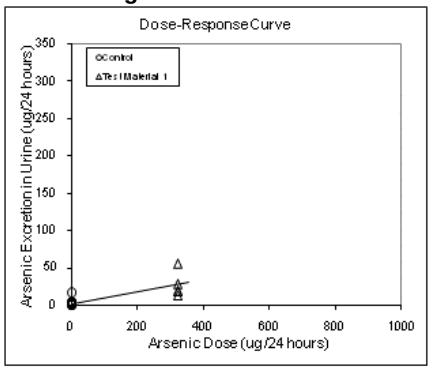
Figure 1b - All Data
Phase II Experiment 2
Day 14

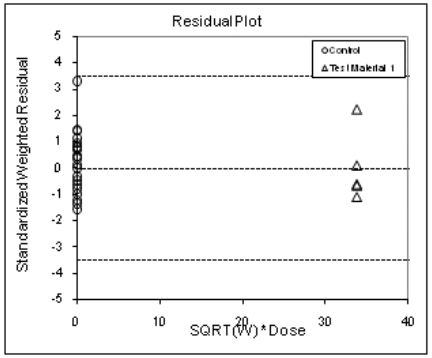
Reference Material
Sodium Arsenate*





Test Material 1
Bingham Creek Channel Soil





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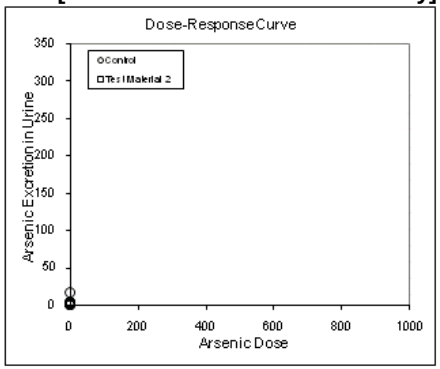

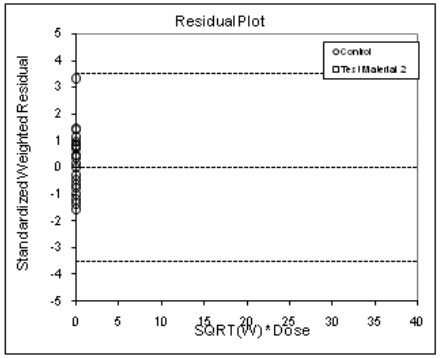

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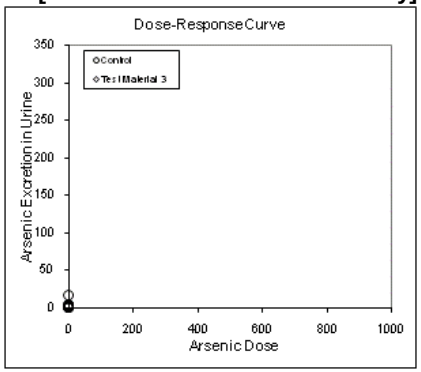

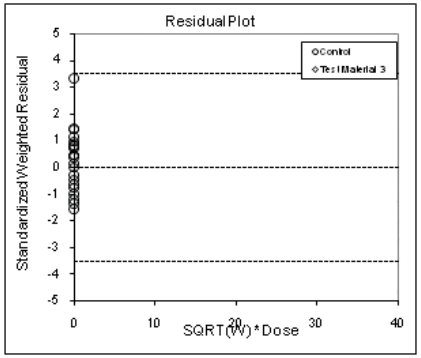

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Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.08	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0030	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	83	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	516.79	2	258.40
Error	155.52	82	1.90
Total	672.31	84	8.00

Statistic	Estimate
F	136.245
p	< 0.001
Adjusted R^2	0.7630

RBA and Uncertainty

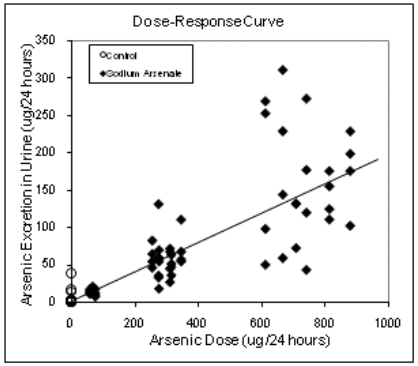
	Test Material 1	Test Material 2	Test Material 3
RBA	0.41	–	–
Lower bound[b]	0.25	–	–
Upper bound[b]	0.58	–	–
Standard Error[b]	0.096	–	–

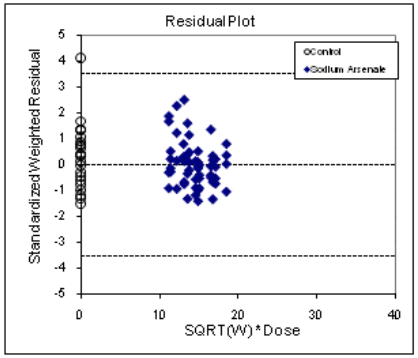
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 1c - All Data

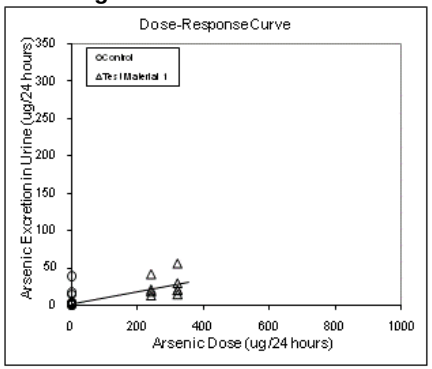
Phase II Experiment 2
All Days (Day 7, 14)

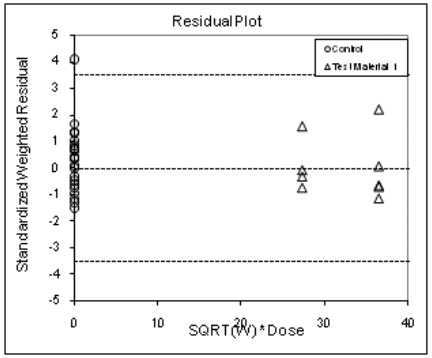
Reference Material
Sodium Arsenate*





Test Material 1
Bingham Creek Channel Soil





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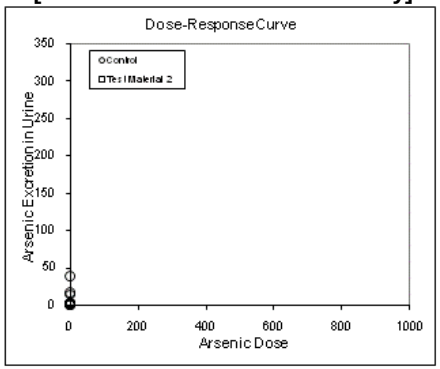

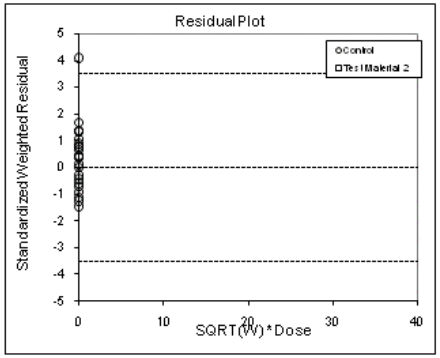

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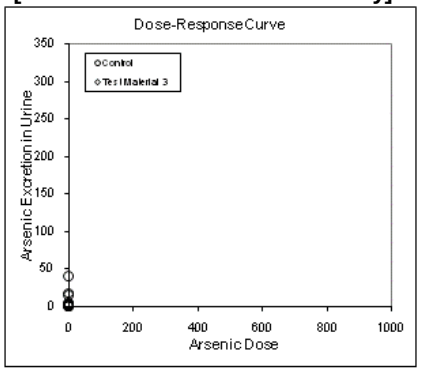
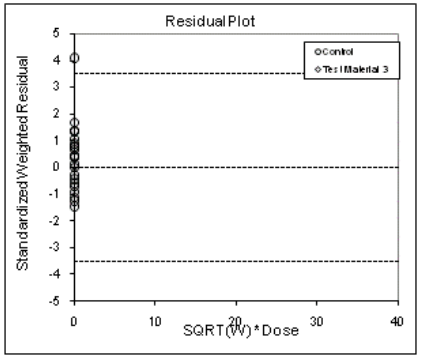




*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.08	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0043	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	258	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	544.53	2	272.27
Error	188.40	88	2.14
Total	732.94	90	8.14

Statistic	Estimate
F	127.172
p	< 0.001
Adjusted R^2	0.7371

RBA and Uncertainty

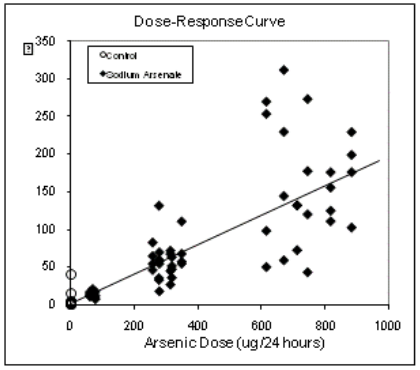
	Test Material 1	Test Material 2	Test Material 3
RBA	0.42	–	–
Lower bound[b]	0.29	–	–
Upper bound[b]	0.56	–	–
Standard Error[b]	0.081	–	–

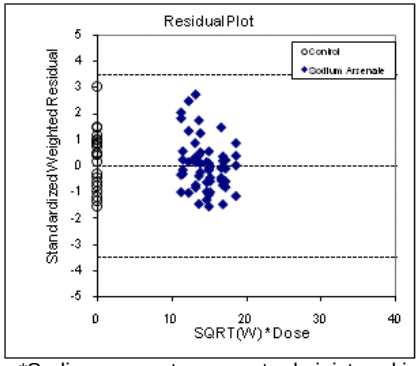
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 1a - Outliers Excluded
Phase II Experiment 2

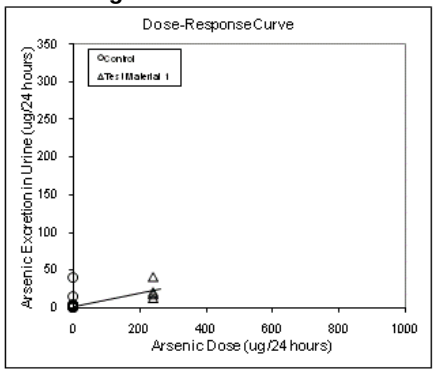
Day 7

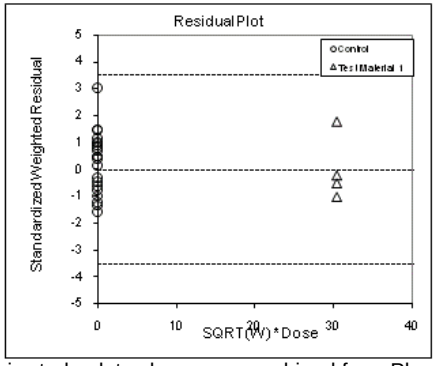
Reference Material
Sodium Arsenate*





Test Material 1
Bingham Creek Channel Soil





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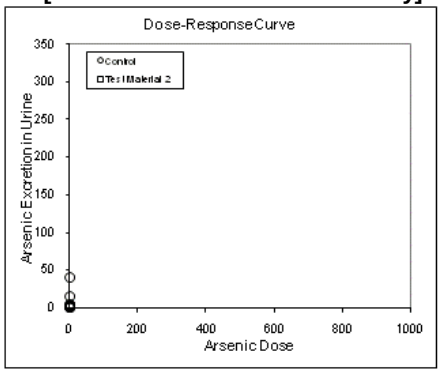

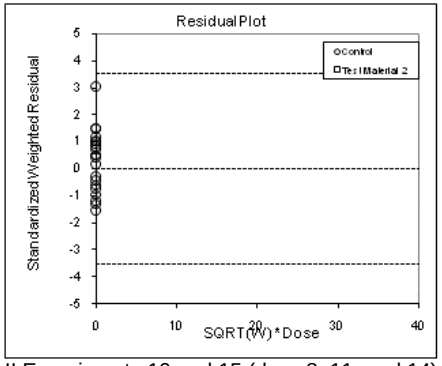

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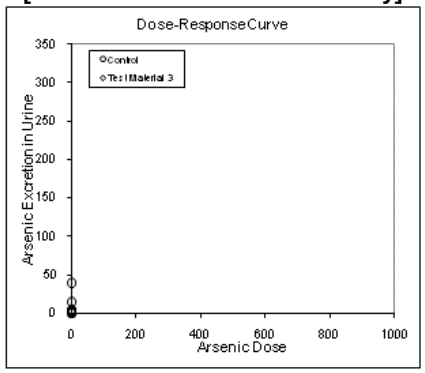

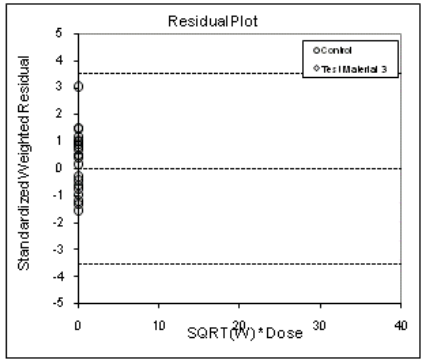

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Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.09	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0032	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	82	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	508.66	2	254.33
Error	148.65	81	1.84
Total	657.31	83	7.92

Statistic	Estimate
F	138.588
p	< 0.001
Adjusted R^2	0.7683

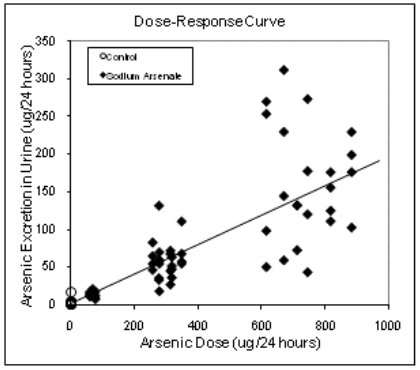
RBA and Uncertainty

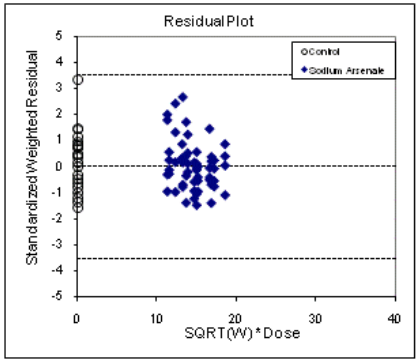
	Test Material 1	Test Material 2	Test Material 3
RBA	0.45	–	–
Lower bound[b]	0.26	–	–
Upper bound[b]	0.65	–	–
Standard Error[b]	0.117	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

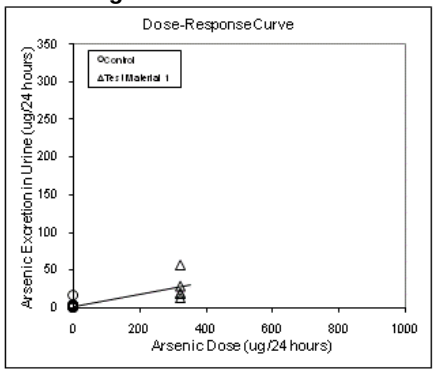
Figure 1b - Outliers Excluded
Phase II Experiment 2
Day 14

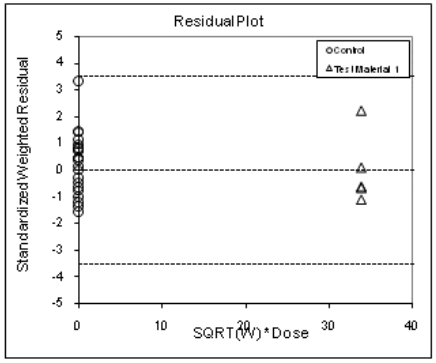
Reference Material
Sodium Arsenate*



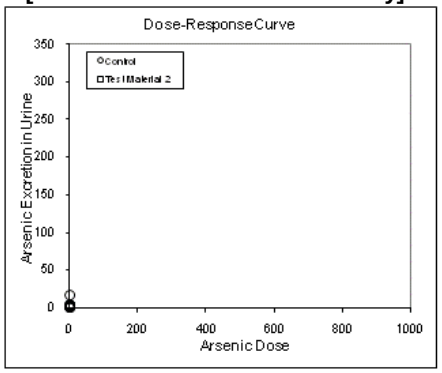


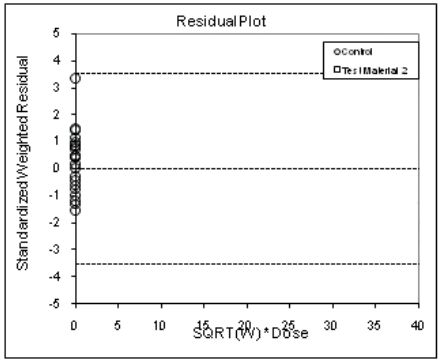
Test Material 1
Bingham Creek Channel Soil



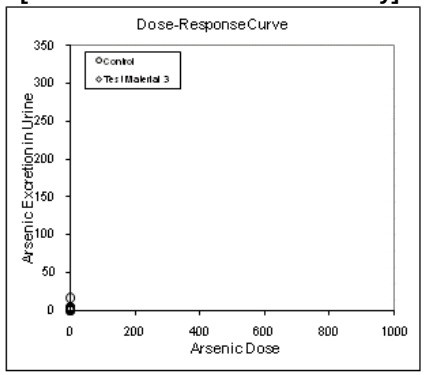


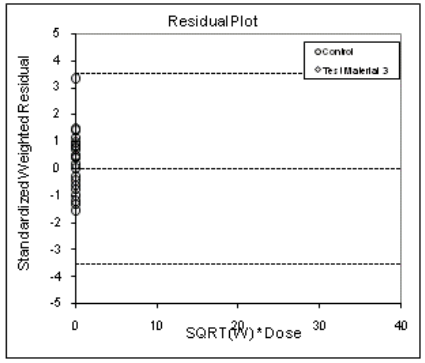
[No Test Material 2 for this study]





[No Test Material 3 for this study]





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Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.08	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0030	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	83	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	516.79	2	258.40
Error	155.52	82	1.90
Total	672.31	84	8.00

Statistic	Estimate
F	136.245
p	< 0.001
Adjusted R^2	0.7630

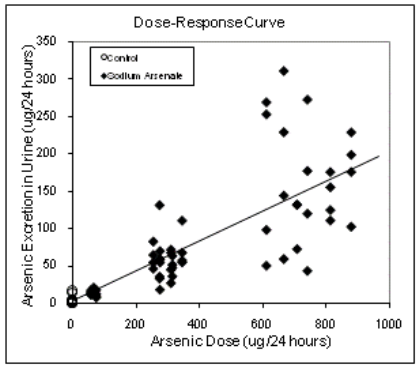
RBA and Uncertainty

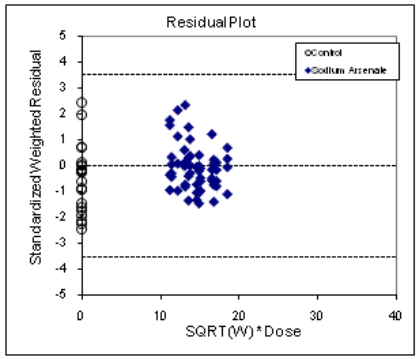
	Test Material 1	Test Material 2	Test Material 3
RBA	0.41	–	–
Lower bound[b]	0.25	–	–
Upper bound[b]	0.58	–	–
Standard Error[b]	0.096	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

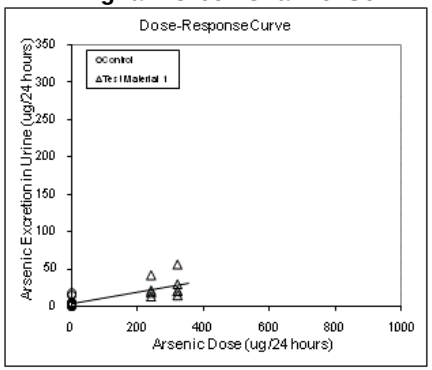
Figure 1c - Outliers Excluded
Phase II Experiment 2
All Days (Day 7, 14)

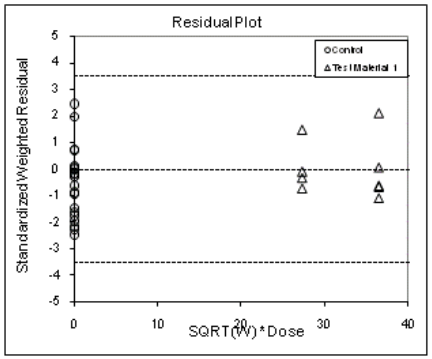
Reference Material
Sodium Arsenate*



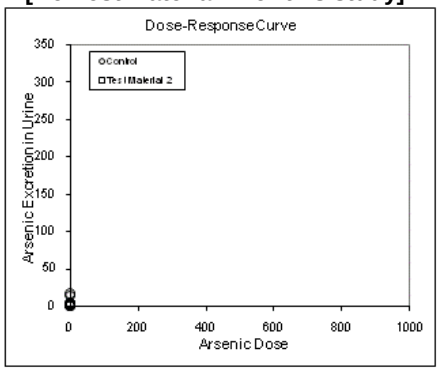


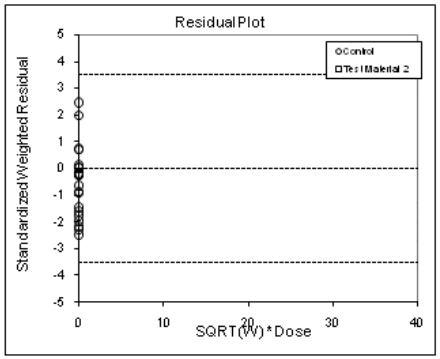
Test Material 1
Bingham Creek Channel Soil



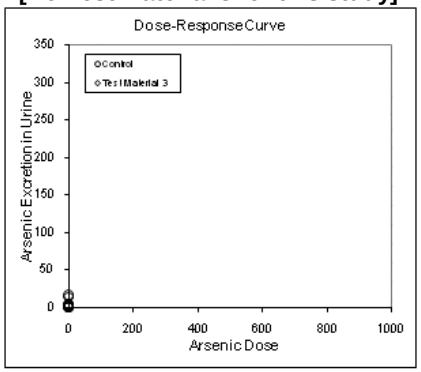


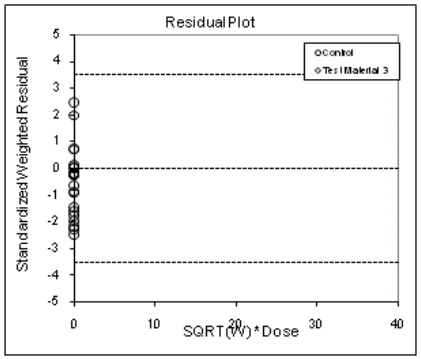
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.8	0.8
b1	0.20	0.01
b2	0.08	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0228	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	257	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	601.21	2	300.60
Error	203.42	87	2.34
Total	804.63	89	9.04

Statistic	Estimate
F	128.561
p	< 0.001
Adjusted R^2	0.7414

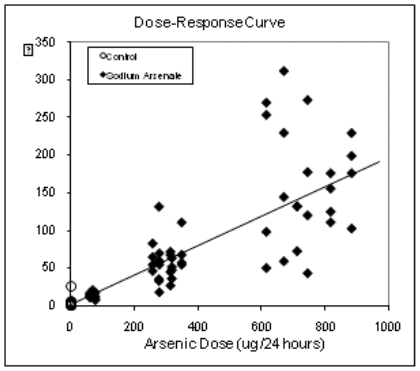
RBA and Uncertainty

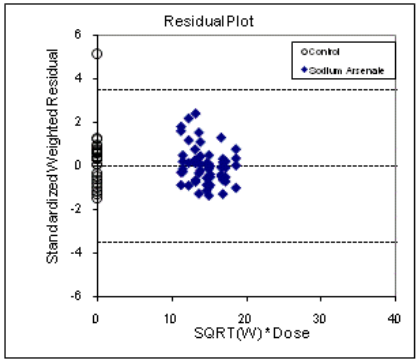
	Test Material 1	Test Material 2	Test Material 3
RBA	0.39	–	–
Lower bound[b]	0.26	–	–
Upper bound[b]	0.53	–	–
Standard Error[b]	0.081	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

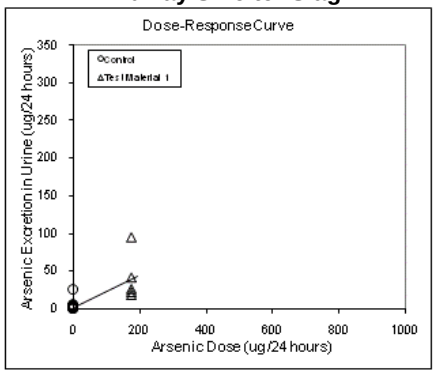
Figure 2a - All Data
Phase II Experiment 4
Day 7

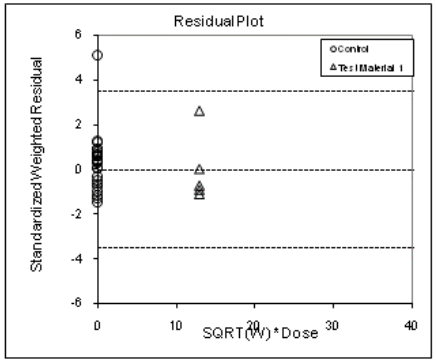
Reference Material
Sodium Arsenate*



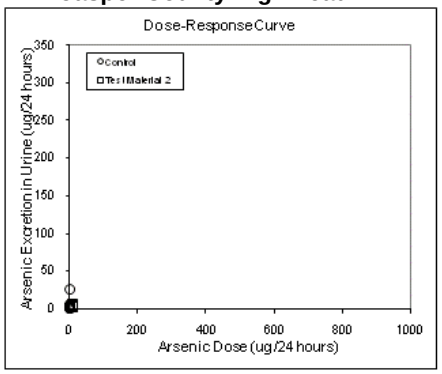


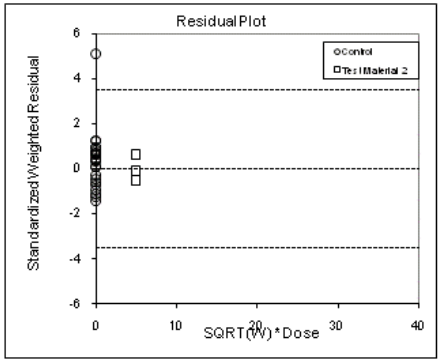
Test Material 1
Murray Smelter Slag



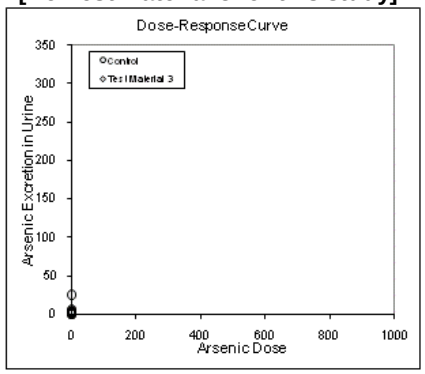


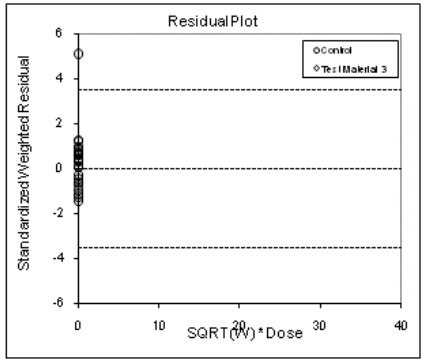
Test Material 2
Jasper County High Lead Mill





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.22	0.05
b3	0.30	0.18
b4	–	–
Covariance (b1,b2)	0.0021	–
Covariance (b1,b3)	0.0139	–
Covariance (b1,b4)	–	–
Degrees of Freedom	88	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	523.32	3	174.44
Error	209.94	87	2.41
Total	733.26	90	8.15

Statistic	Estimate
F	72.289
p	< 0.001
Adjusted R^2	0.7038

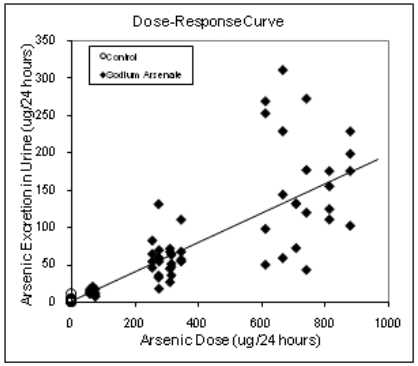
RBA and Uncertainty

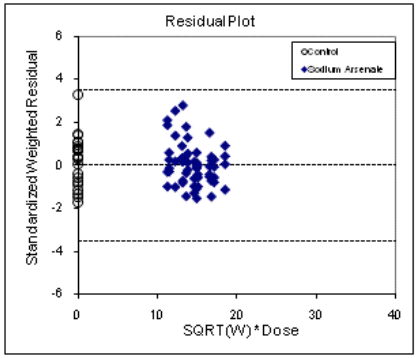
	Test Material 1	Test Material 2	Test Material 3
RBA	1.11	1.53	–
Lower bound[b]	0.65	-0.03	–
Upper bound[b]	1.60	3.13	–
Standard Error[b]	0.285	0.944	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

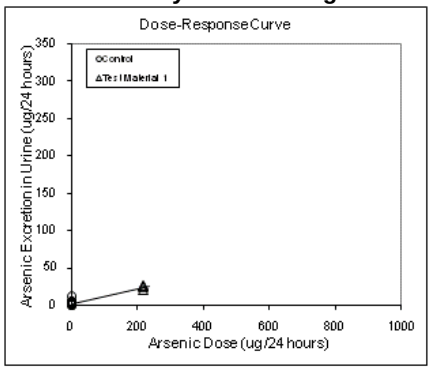
Figure 2b - All Data
Phase II Experiment 4
Day 14

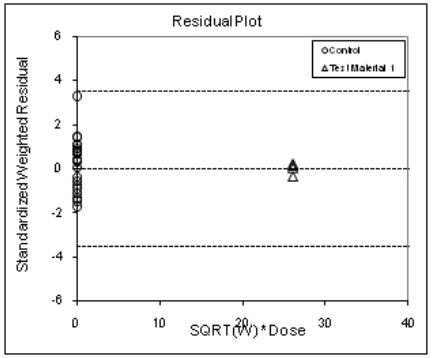
Reference Material
Sodium Arsenate*



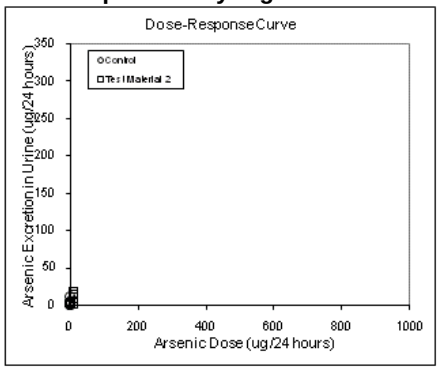


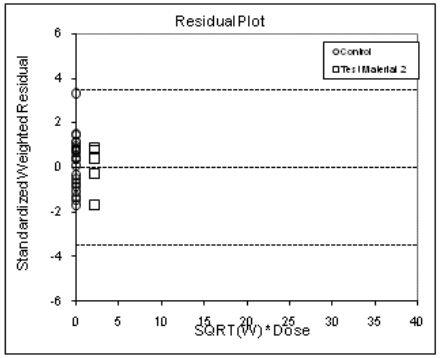
Test Material 1
Murray Smelter Slag



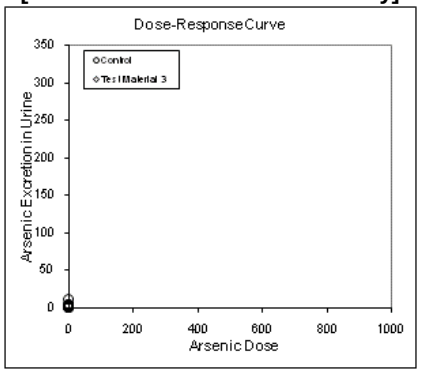


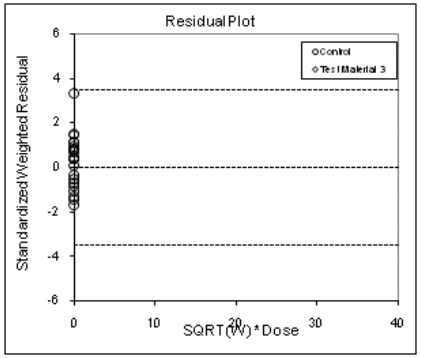
Test Material 2
Jasper County High Lead Mill





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.10	0.03
b3	1.12	0.28
b4	–	–
Covariance (b1,b2)	0.0030	–
Covariance (b1,b3)	0.0064	–
Covariance (b1,b4)	–	–
Degrees of Freedom	88	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	533.91	3	177.97
Error	153.45	87	1.76
Total	687.36	90	7.64

Statistic	Estimate
F	100.901
p	< 0.001
Adjusted R^2	0.7691

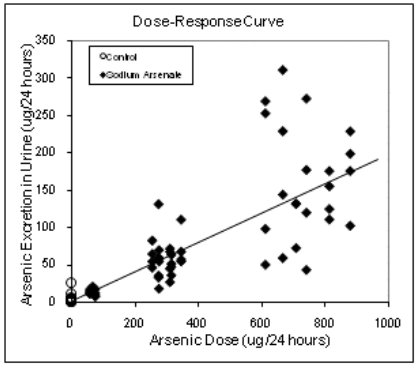
RBA and Uncertainty

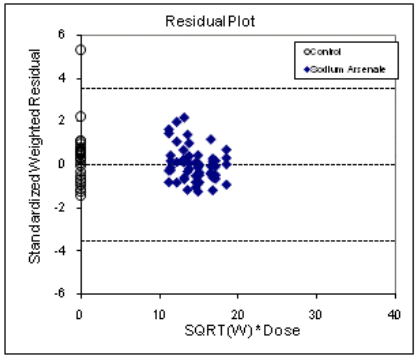
	Test Material 1	Test Material 2	Test Material 3
RBA	0.52	5.71	–
Lower bound[b]	0.30	3.31	–
Upper bound[b]	0.75	8.22	–
Standard Error[b]	0.134	1.466	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

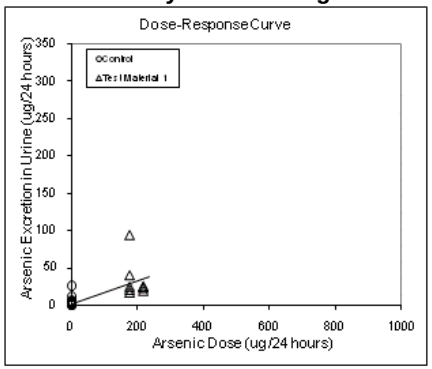
Figure 2c - All Data
Phase II Experiment 4
All Days (Day 7, 14)

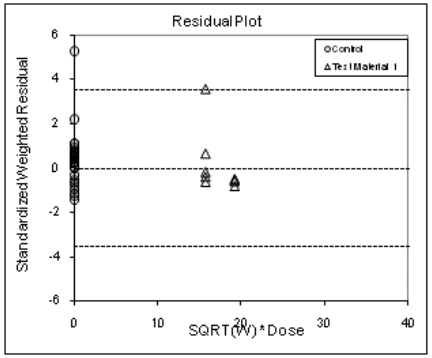
Reference Material
Sodium Arsenate*



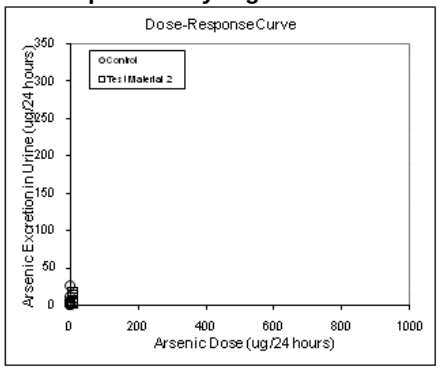


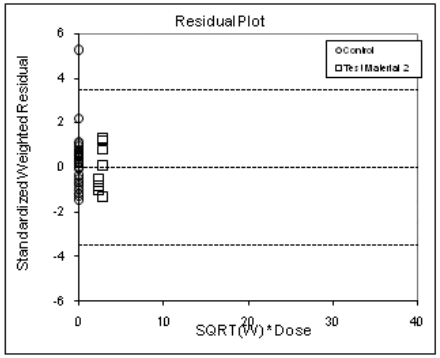
Test Material 1
Murray Smelter Slag



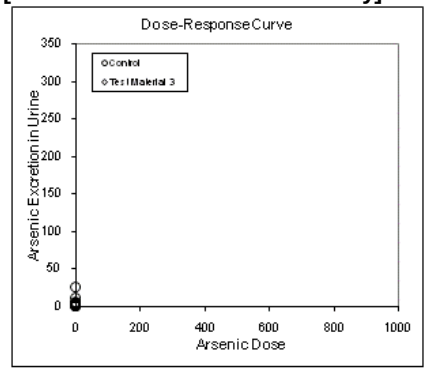


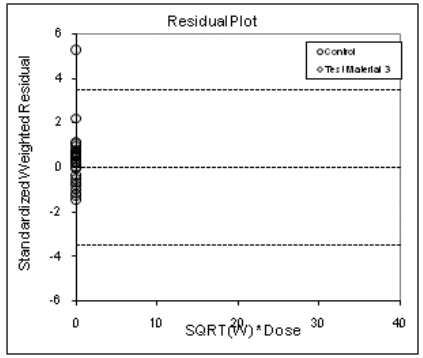
Test Material 2
Jasper County High Lead Mill





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.0	0.3
b1	0.20	0.01
b2	0.15	0.03
b3	0.87	0.23
b4	–	–
Covariance (b1,b2)	0.0033	–
Covariance (b1,b3)	0.0105	–
Covariance (b1,b4)	–	–
Degrees of Freedom	283	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

Adjusted R^2	0.6630

ANOVA

Source	SSE	DF	MSE
Fit	578.17	3	192.72
Error	281.21	100	2.81
Total	859.38	103	8.34

Statistic	Estimate
F	68.535
p	< 0.001

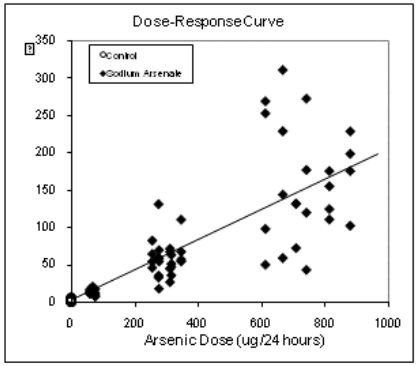
RBA and Uncertainty

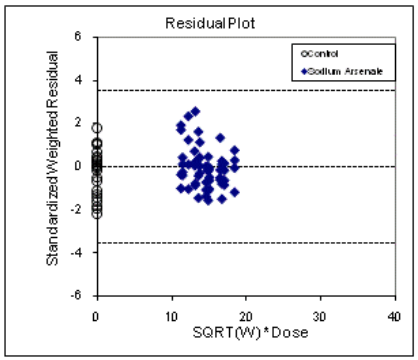
	Test Material 1	Test Material 2	Test Material 3
RBA	0.79	4.44	–
Lower bound[b]	0.51	2.50	–
Upper bound[b]	1.09	6.53	–
Standard Error[b]	0.176	1.209	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

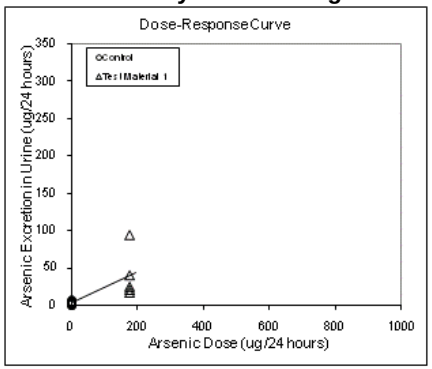
Figure 2a - Outliers Excluded
Phase II Experiment 4
Day 7

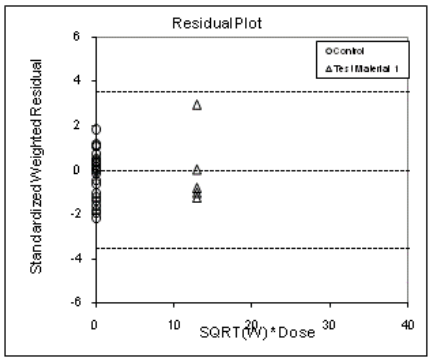
Reference Material
Sodium Arsenate*



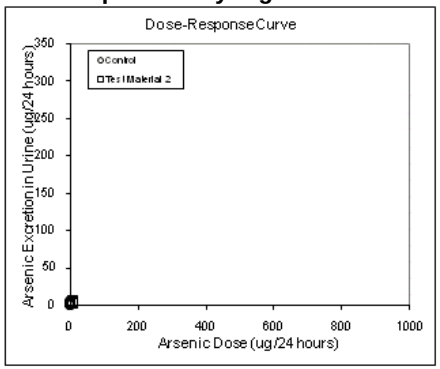


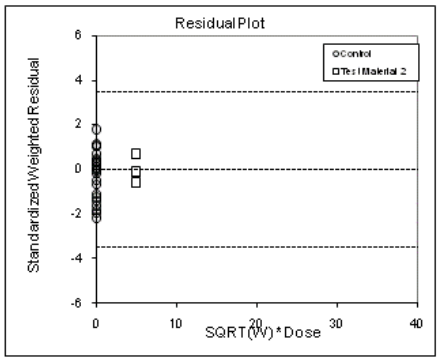
Test Material 1
Murray Smelter Slag



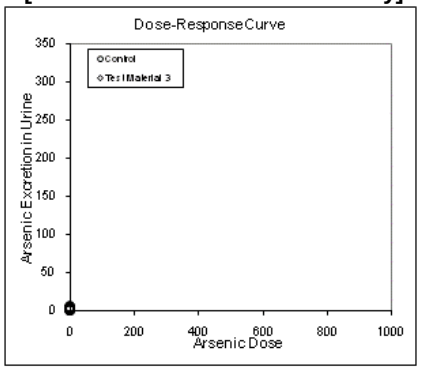


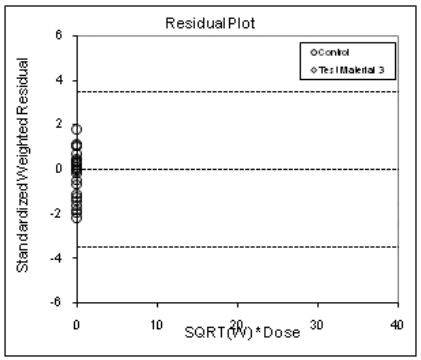
Test Material 2
Jasper County High Lead Mill





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.4	0.6
b1	0.20	0.01
b2	0.21	0.04
b3	0.24	0.20
b4	–	–
Covariance (b1,b2)	0.0095	–
Covariance (b1,b3)	0.0487	–
Covariance (b1,b4)	–	–
Degrees of Freedom	87	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	563.33	3	187.78
Error	168.85	86	1.96
Total	732.18	89	8.23

Statistic	Estimate
F	95.637
p	< 0.001
Adjusted R^2	0.7613

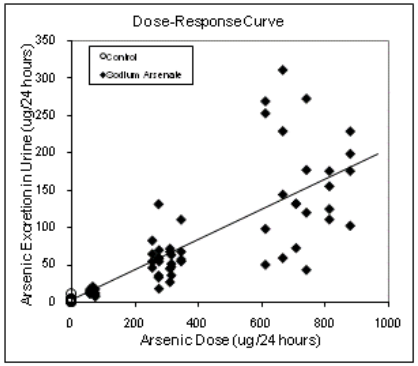
RBA and Uncertainty

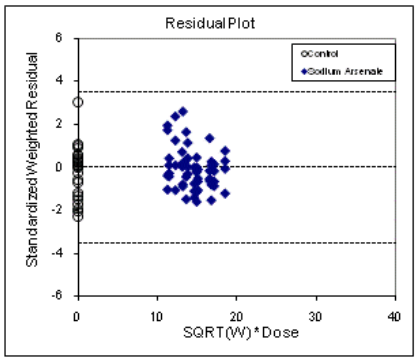
	Test Material 1	Test Material 2	Test Material 3
RBA	1.06	1.17	–
Lower bound[b]	0.69	-0.46	–
Upper bound[b]	1.45	2.81	–
Standard Error[b]	0.228	0.978	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

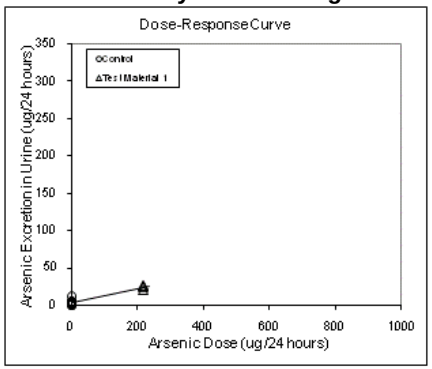
Figure 2b - Outliers Excluded
Phase II Experiment 4
Day 14

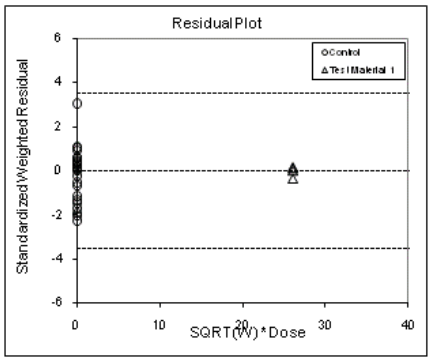
Reference Material
Sodium Arsenate*



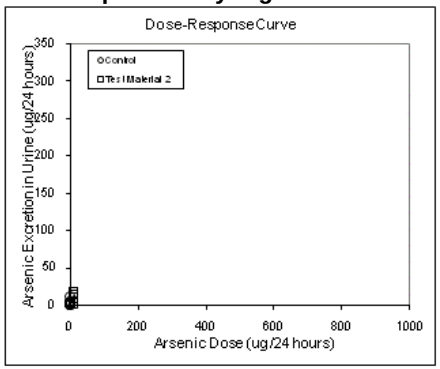


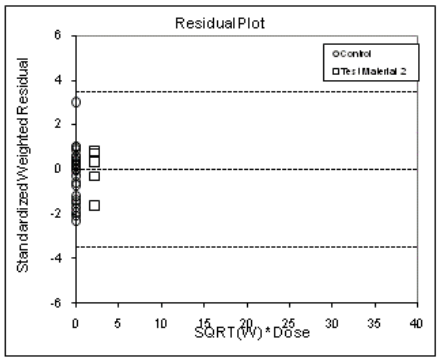
Test Material 1
Murray Smelter Slag



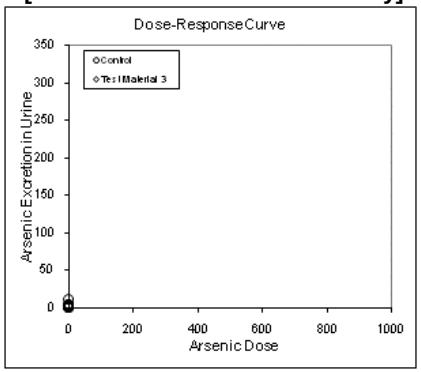


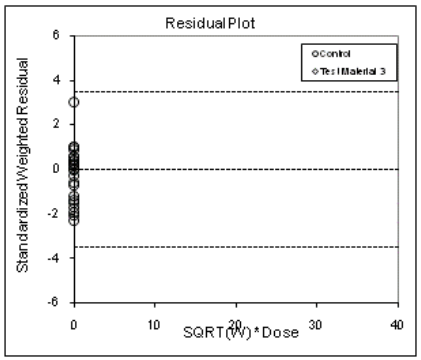
Test Material 2
Jasper County High Lead Mill





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.4	0.6
b1	0.20	0.01
b2	0.10	0.02
b3	1.06	0.24
b4	–	–
Covariance (b1,b2)	0.0157	–
Covariance (b1,b3)	0.0371	–
Covariance (b1,b4)	–	–
Degrees of Freedom	88	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	574.73	3	191.58
Error	165.46	87	1.90
Total	740.19	90	8.22

Statistic	Estimate
F	100.736
p	< 0.001
Adjusted R^2	0.7688

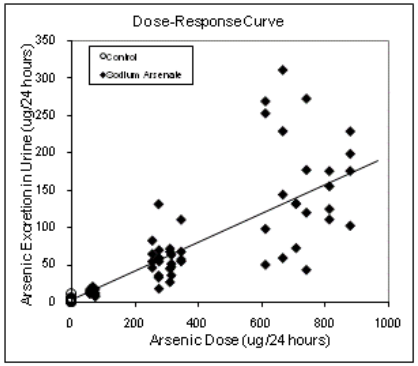
RBA and Uncertainty

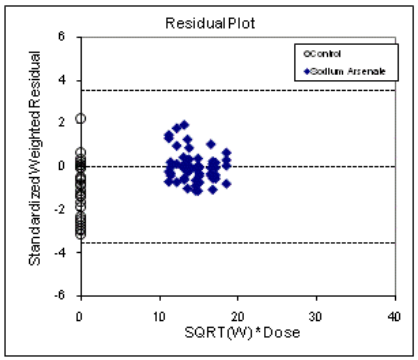
	Test Material 1	Test Material 2	Test Material 3
RBA	0.49	5.23	–
Lower bound[b]	0.29	3.21	–
Upper bound[b]	0.71	7.35	–
Standard Error[b]	0.126	1.238	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

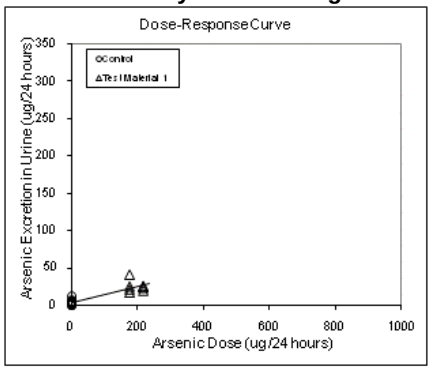
Figure 2c - Outliers Excluded
Phase II Experiment 4
All Days (Day 7, 14)

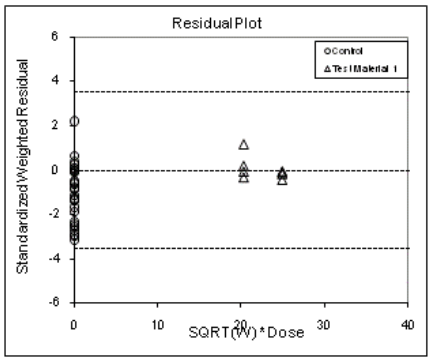
Reference Material
Sodium Arsenate*



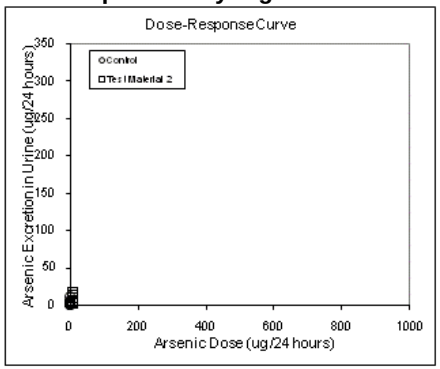


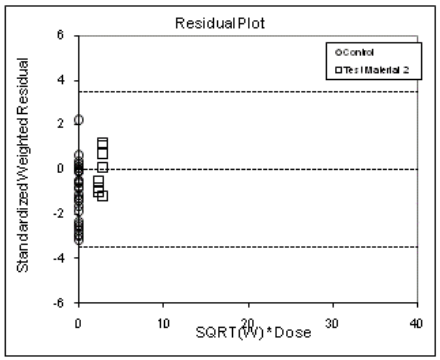
Test Material 1
Murray Smelter Slag



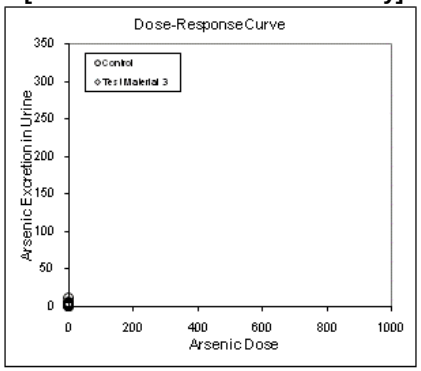


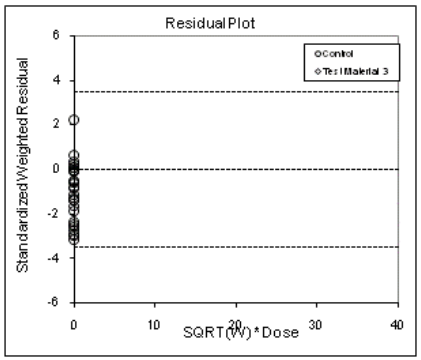
Test Material 2
Jasper County High Lead Mill





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	4.1	0.8
b1	0.19	0.01
b2	0.11	0.02
b3	0.63	0.20
b4	–	–
Covariance (b1,b2)	0.0295	–
Covariance (b1,b3)	0.0639	–
Covariance (b1,b4)	–	–
Degrees of Freedom	280	–

[a] y = a + b1*x1 + b2*x2 +b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	696.94	3	232.31
Error	364.38	98	3.72
Total	1061.32	101	10.51

Statistic	Estimate
F	62.480
p	< 0.001
Adjusted R^2	0.6462

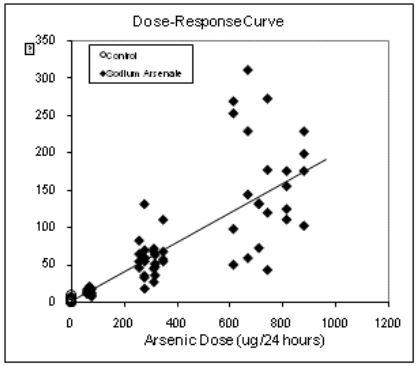
RBA and Uncertainty

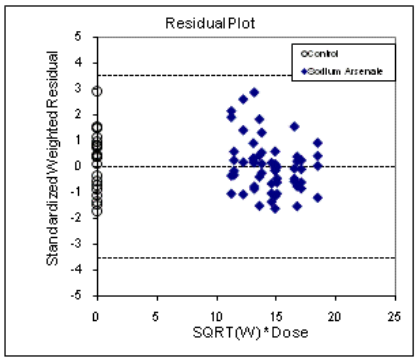
	Test Material 1	Test Material 2	Test Material 3
RBA	0.55	3.27	–
Lower bound[b]	0.38	1.54	–
Upper bound[b]	0.73	5.03	–
Standard Error[b]	0.104	1.054	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

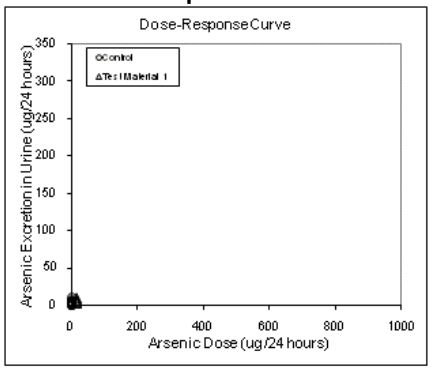
Figure 3a - All Data
Phase II Experiment 5
Day 7

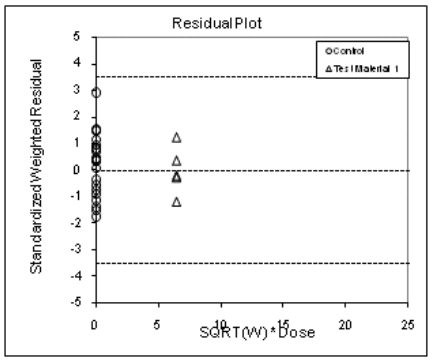
Reference Material
Sodium Arsenate*



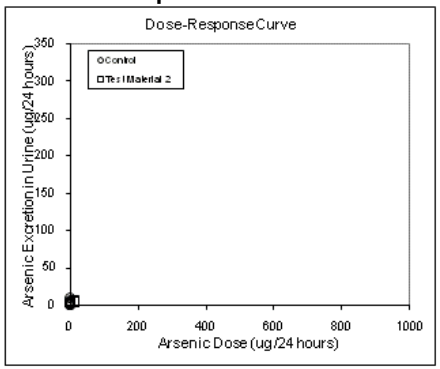


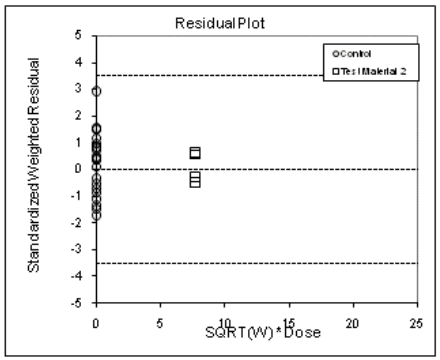
Test Material 1
Aspen Berm



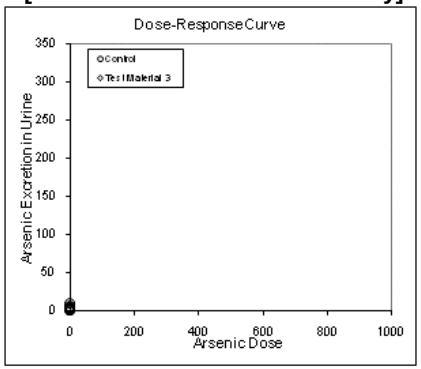


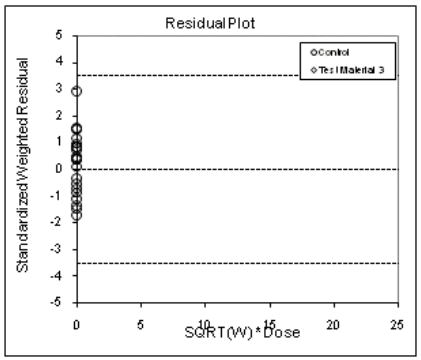
Test Material 2
Aspen Residential





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.29	0.09
b3	0.21	0.08
b4	–	–
Covariance (b1,b2)	0.0128	–
Covariance (b1,b3)	0.0158	–
Covariance (b1,b4)	–	–
Degrees of Freedom	89	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	503.73	3	167.91
Error	148.79	88	1.69
Total	652.52	91	7.17

Statistic	Estimate
F	99.310
p	< 0.001
Adjusted R^2	0.7642

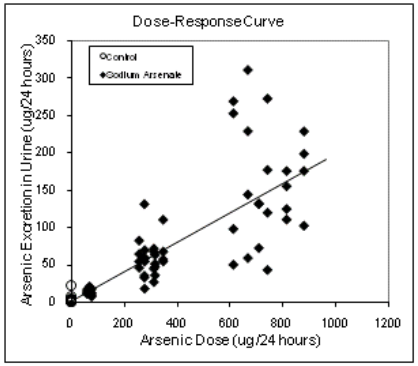
RBA and Uncertainty

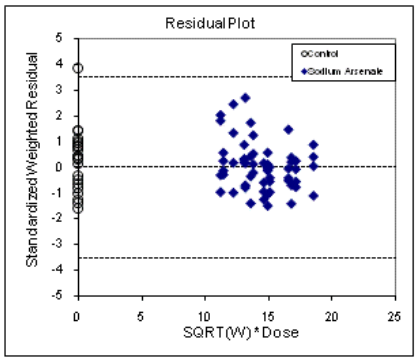
	Test Material 1	Test Material 2	Test Material 3
RBA	1.48	1.07	–
Lower bound[b]	0.70	0.42	–
Upper bound[b]	2.29	1.75	–
Standard Error[b]	0.476	0.397	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

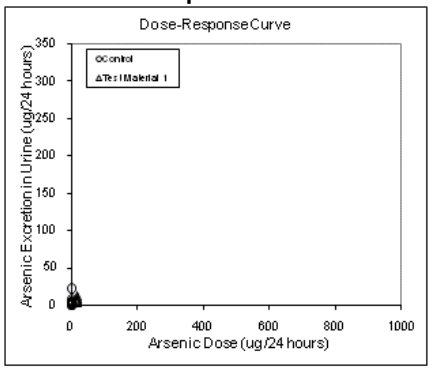
Figure 3b - All Data
Phase II Experiment 5
Day 14

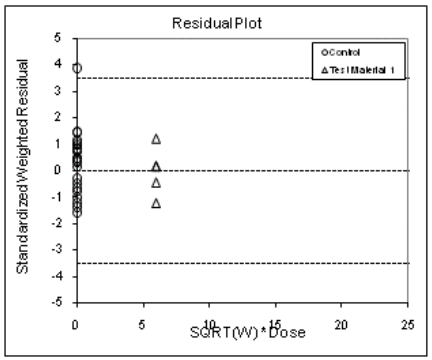
Reference Material
Sodium Arsenate*



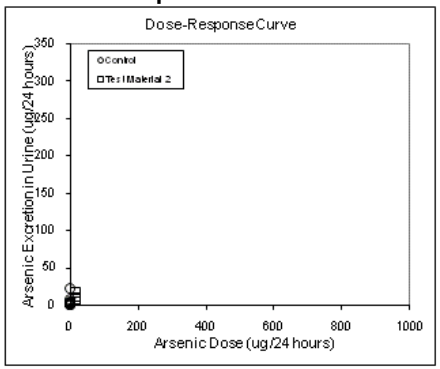


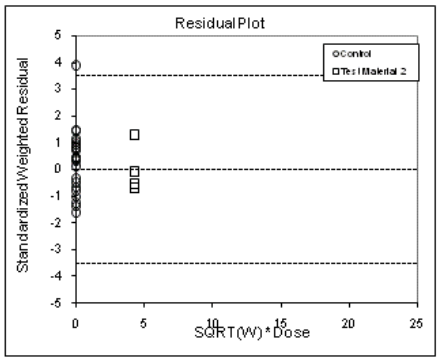
Test Material 1
Aspen Berm



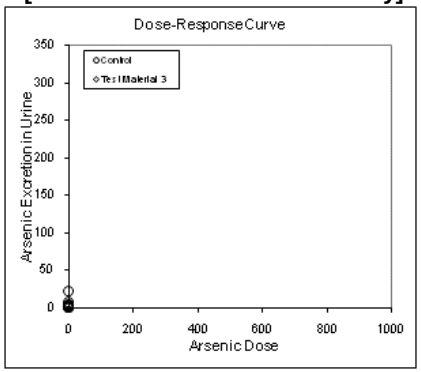


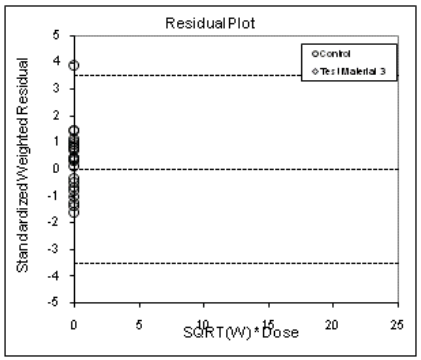
Test Material 2
Aspen Residential





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.35	0.10
b3	0.54	0.16
b4	–	–
Covariance (b1,b2)	0.0101	–
Covariance (b1,b3)	0.0067	–
Covariance (b1,b4)	–	–
Degrees of Freedom	87	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	519.87	3	173.29
Error	161.87	86	1.88
Total	681.74	89	7.66

Statistic	Estimate
F	92.067
p	< 0.001
Adjusted R^2	0.7543

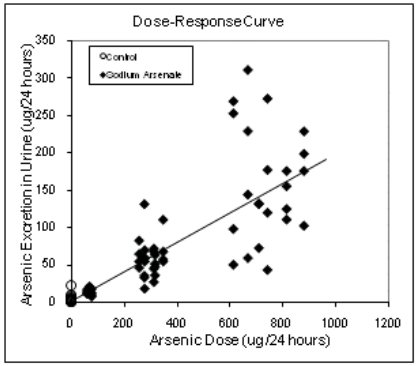
RBA and Uncertainty

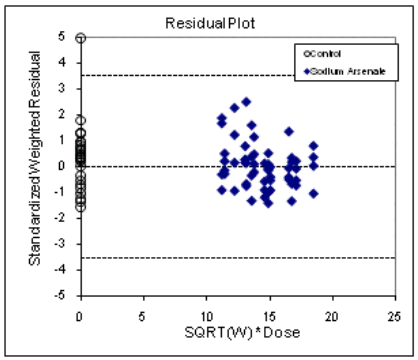
	Test Material 1	Test Material 2	Test Material 3
RBA	1.81	2.76	–
Lower bound[b]	0.92	1.39	–
Upper bound[b]	2.74	4.19	–
Standard Error[b]	0.542	0.838	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

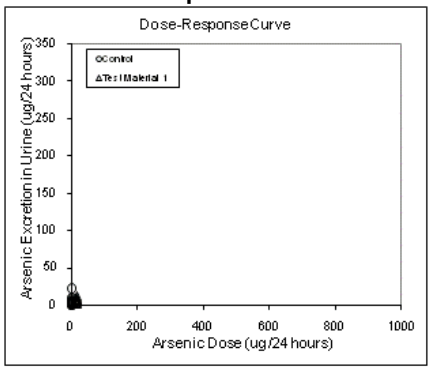
Figure 3c - All Data
Phase II Experiment 5
All Days (Day 7, 14)

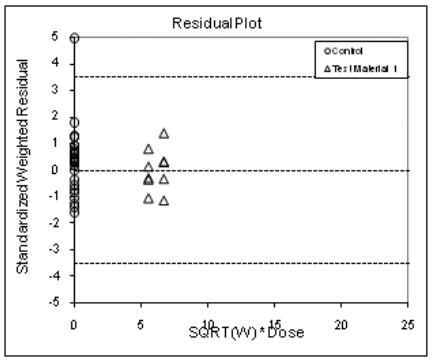
Reference Material
Sodium Arsenate*



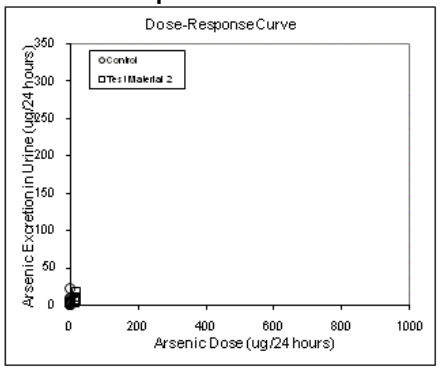


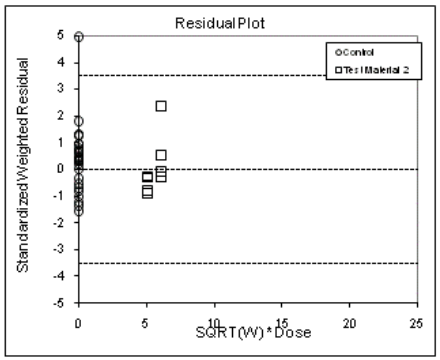
Test Material 1
Aspen Berm



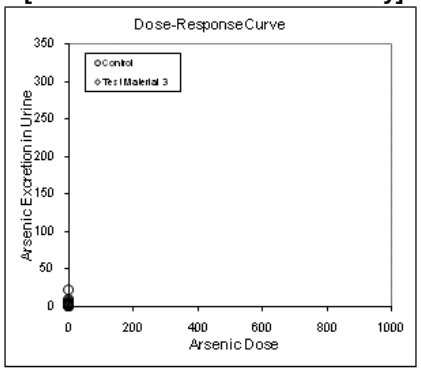


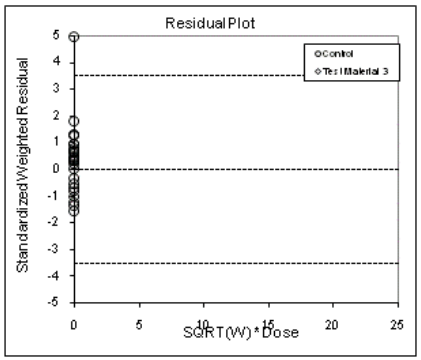
Test Material 2
Aspen Residential





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.32	0.08
b3	0.38	0.09
b4	–	–
Covariance (b1,b2)	0.0156	–
Covariance (b1,b3)	0.0139	–
Covariance (b1,b4)	–	–
Degrees of Freedom	283	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	546.66	3	182.22
Error	217.03	100	2.17
Total	763.70	103	7.41

Statistic	Estimate
F	83.960
p	< 0.001
Adjusted R^2	0.7073

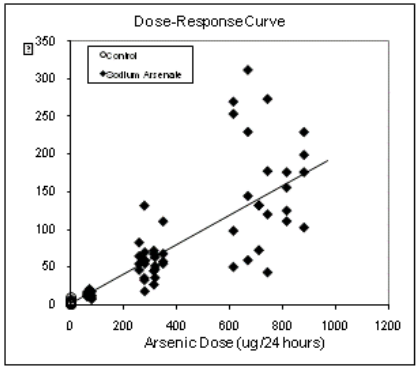
RBA and Uncertainty

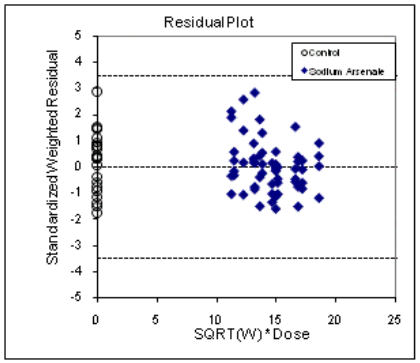
	Test Material 1	Test Material 2	Test Material 3
RBA	1.66	1.96	–
Lower bound[b]	1.00	1.19	–
Upper bound[b]	2.35	2.78	–
Standard Error[b]	0.407	0.477	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

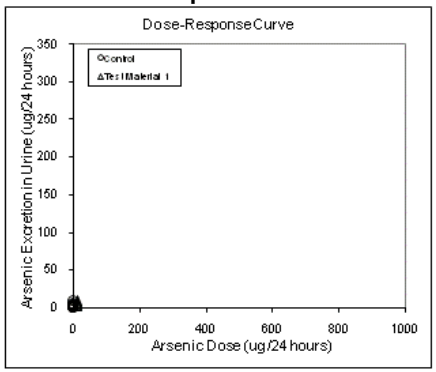
Figure 3a - Outliers Excluded
Phase II Experiment 5
Day 7

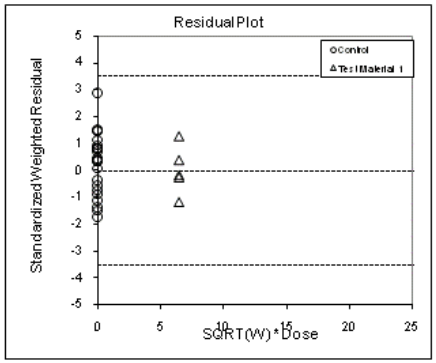
Reference Material
Sodium Arsenate*



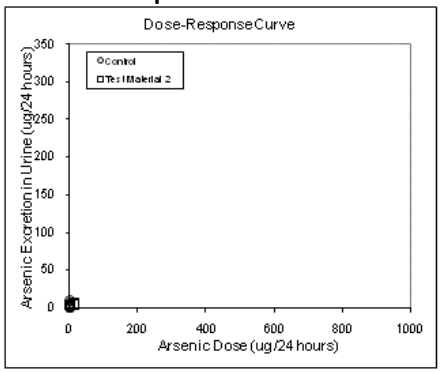


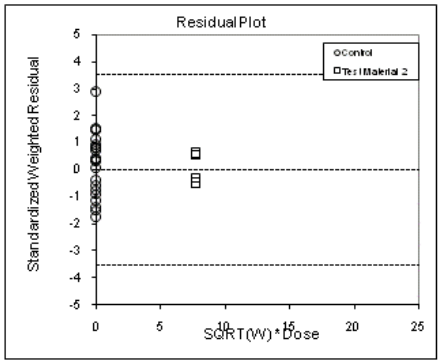
Test Material 1
Aspen Berm



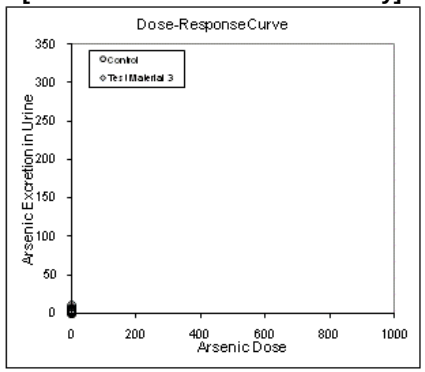


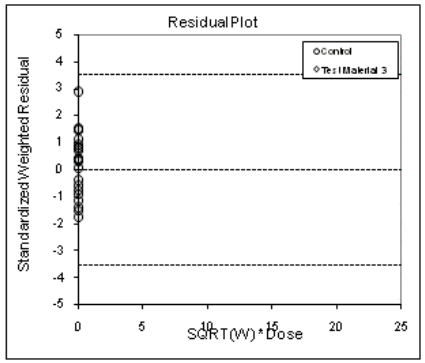
Test Material 2
Aspen Residential





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.29	0.09
b3	0.21	0.08
b4	–	–
Covariance (b1,b2)	0.0128	–
Covariance (b1,b3)	0.0158	–
Covariance (b1,b4)	–	–
Degrees of Freedom	89	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	503.73	3	167.91
Error	148.79	88	1.69
Total	652.52	91	7.17

Statistic	Estimate
F	99.310
p	< 0.001
Adjusted R^2	0.7642

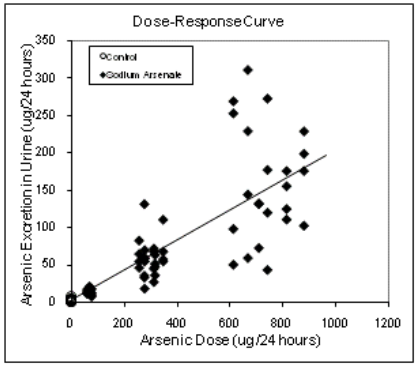
RBA and Uncertainty

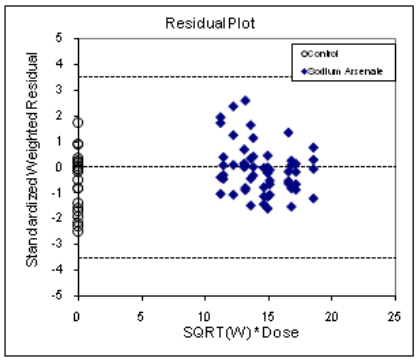
	Test Material 1	Test Material 2	Test Material 3
RBA	1.48	1.07	–
Lower bound[b]	0.70	0.42	–
Upper bound[b]	2.29	1.75	–
Standard Error[b]	0.476	0.397	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

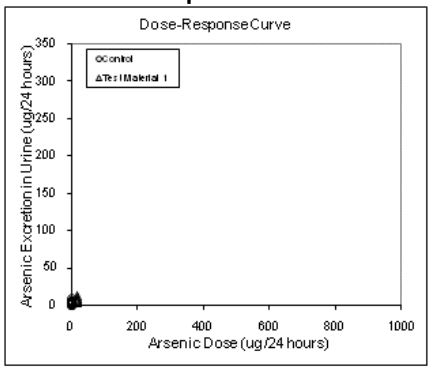
Figure 3b - Outliers Excluded
Phase II Experiment 5
Day 14

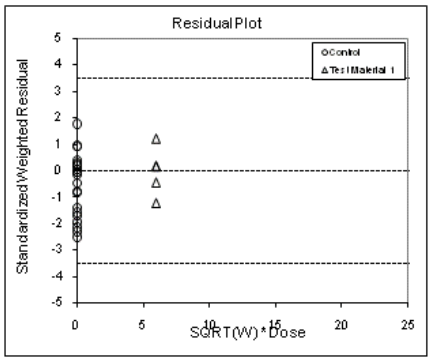
Reference Material
Sodium Arsenate*



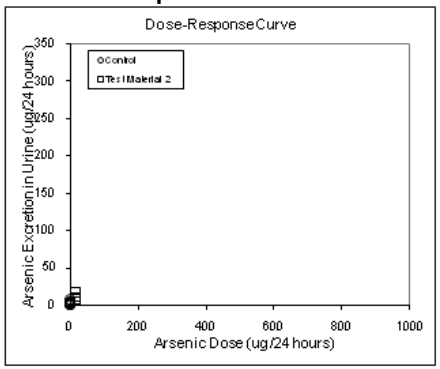


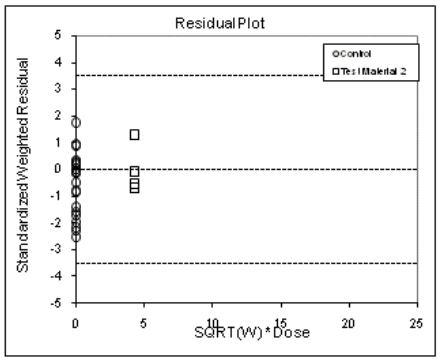
Test Material 1
Aspen Berm



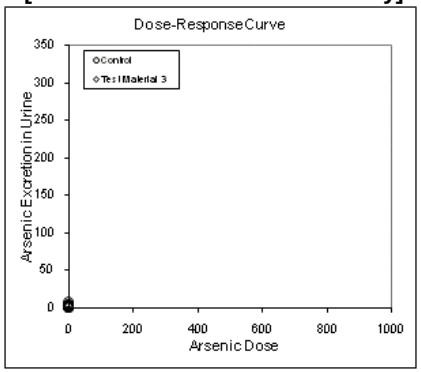


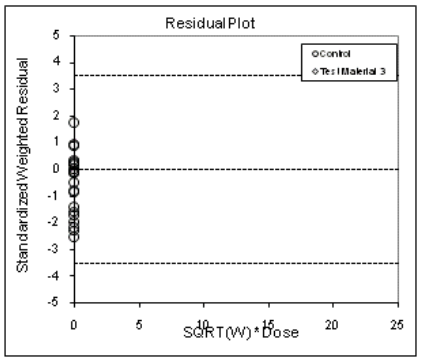
Test Material 2
Aspen Residential





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.6	0.6
b1	0.20	0.01
b2	0.31	0.13
b3	0.49	0.14
b4	–	–
Covariance (b1,b2)	0.0340	–
Covariance (b1,b3)	0.0335	–
Covariance (b1,b4)	–	–
Degrees of Freedom	86	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	562.75	3	187.58
Error	164.15	85	1.93
Total	726.89	88	8.26

Statistic	Estimate
F	97.135
p	< 0.001
Adjusted R^2	0.7662

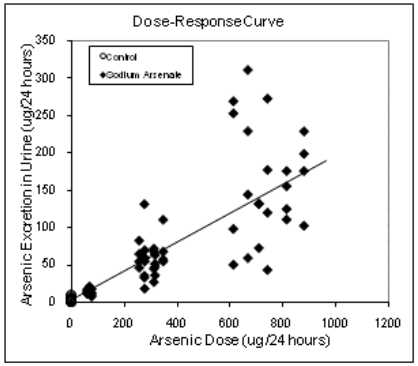
RBA and Uncertainty

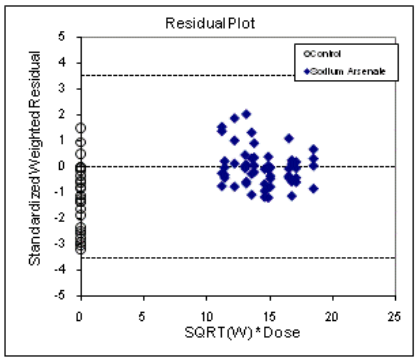
	Test Material 1	Test Material 2	Test Material 3
RBA	1.53	2.44	–
Lower bound[b]	0.45	1.31	–
Upper bound[b]	2.64	3.62	–
Standard Error[b]	0.654	0.693	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

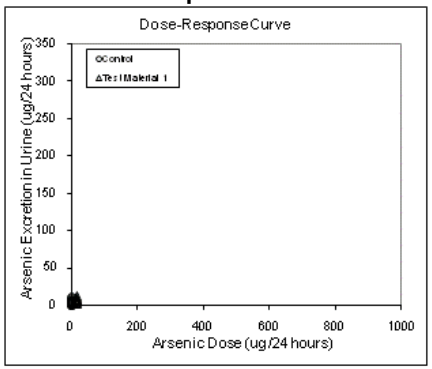
Figure 3c - Outliers Excluded
Phase II Experiment 5
All Days (Day 7, 14)

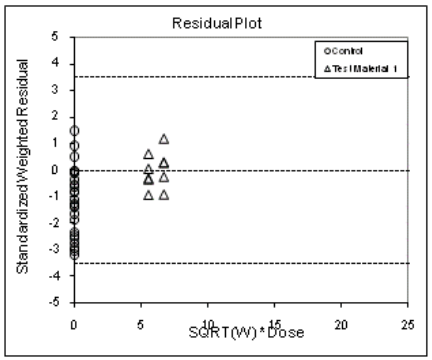
Reference Material
Sodium Arsenate*



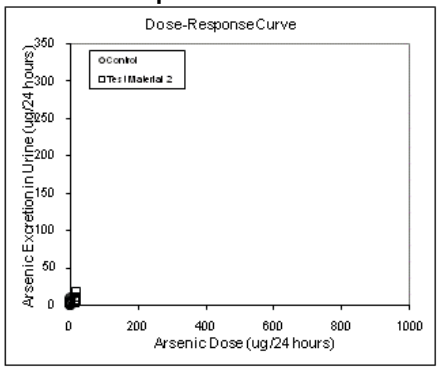


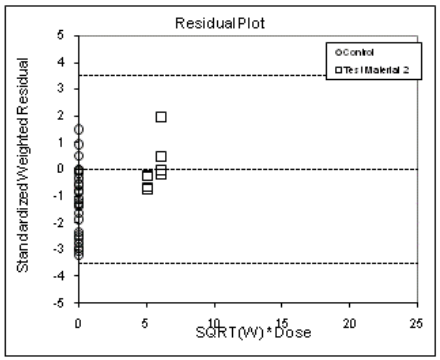
Test Material 1
Aspen Berm



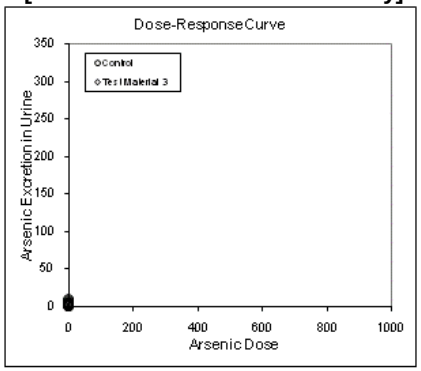


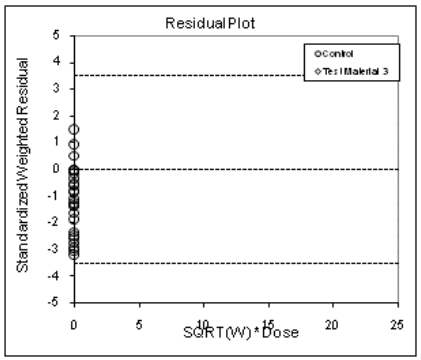
Test Material 2
Aspen Residential





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	4.0	0.8
b1	0.19	0.01
b2	0.19	0.09
b3	0.24	0.10
b4	–	–
Covariance (b1,b2)	0.0816	–
Covariance (b1,b3)	0.0764	–
Covariance (b1,b4)	–	–
Degrees of Freedom	281	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	637.33	3	212.44
Error	343.57	99	3.47
Total	980.91	102	9.62

Statistic	Estimate
F	61.215
p	< 0.001
Adjusted R^2	0.6391

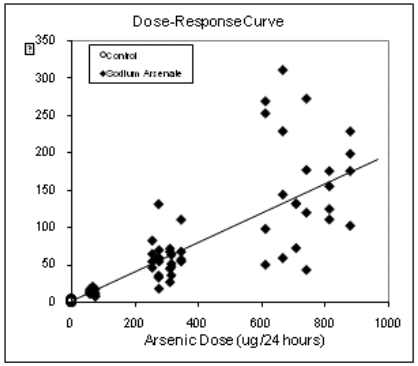
RBA and Uncertainty

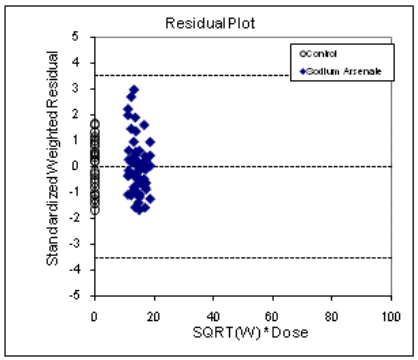
	Test Material 1	Test Material 2	Test Material 3
RBA	1.00	1.28	–
Lower bound[b]	0.23	0.42	–
Upper bound[b]	1.77	2.14	–
Standard Error[b]	0.465	0.520	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

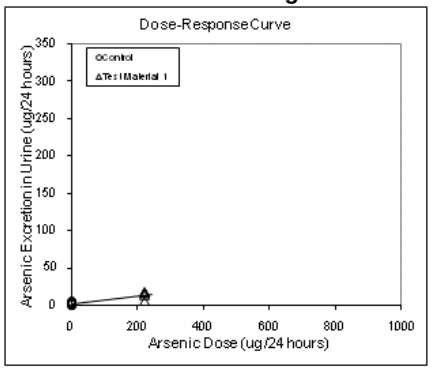
Figure 4a - All Data
Phase II Experiment 6
Day 7

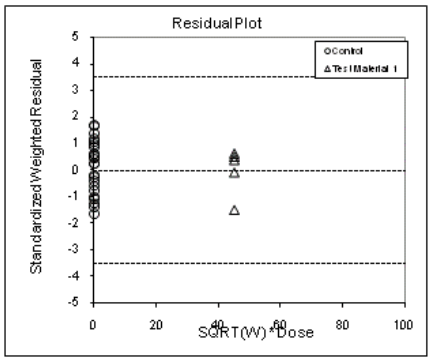
Reference Material
Sodium Arsenate*



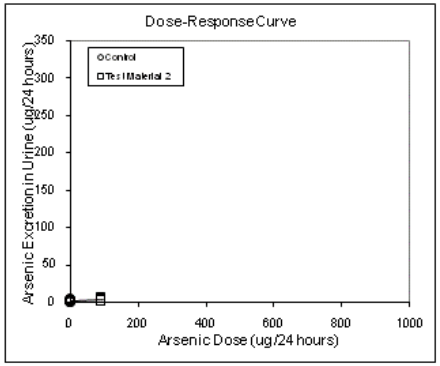


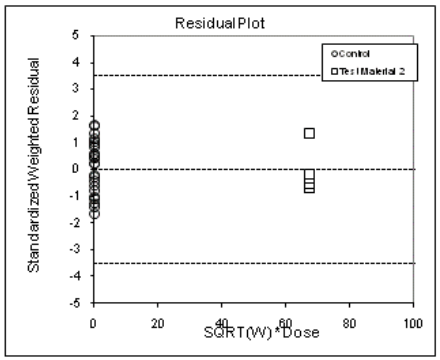
Test Material 1
Midvale Slag



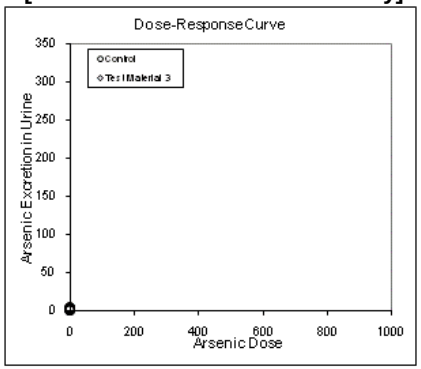


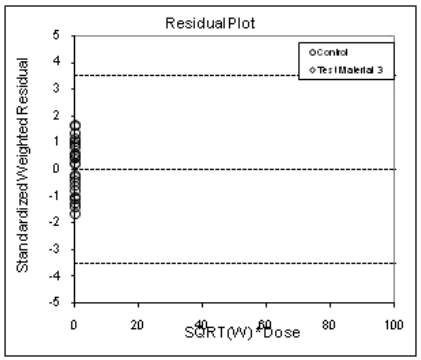
Test Material 2
Butte Soil





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.05	0.01
b3	0.02	0.01
b4	–	–
Covariance (b1,b2)	0.0046	–
Covariance (b1,b3)	0.0148	–
Covariance (b1,b4)	–	–
Degrees of Freedom	88	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	517.34	3	172.45
Error	132.86	87	1.53
Total	650.19	90	7.22

Statistic	Estimate
F	112.926
p	< 0.001
Adjusted R^2	0.7886

RBA and Uncertainty

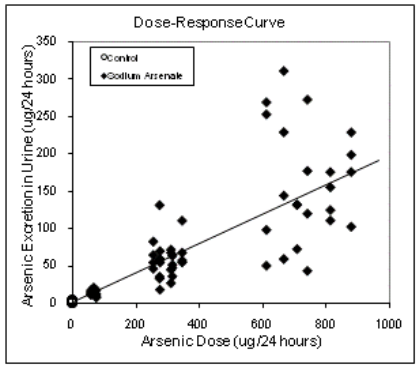
	Test Material 1	Test Material 2	Test Material 3
RBA	0.28	0.10	–
Lower bound[b]	0.17	0.02	–
Upper bound[b]	0.39	0.18	–
Standard Error[b]	0.065	0.048	–

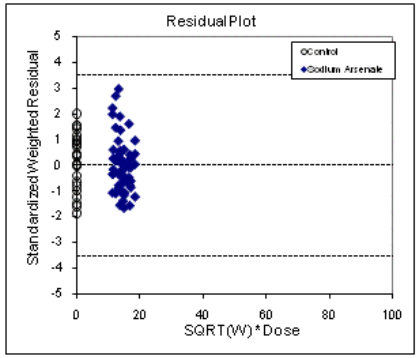
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 4b - All Data

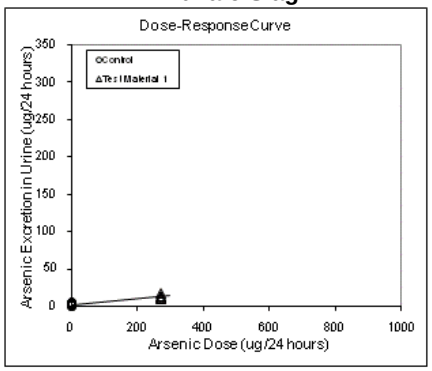
Phase II Experiment 6
Day 14

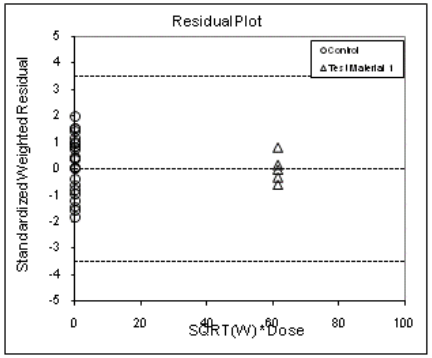
Reference Material
Sodium Arsenate*



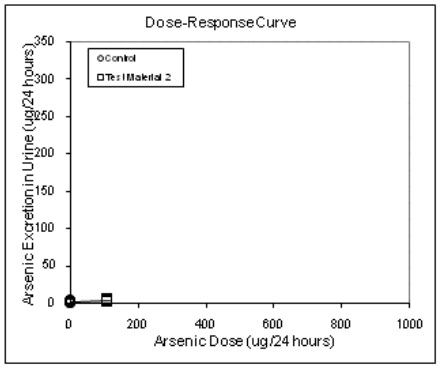


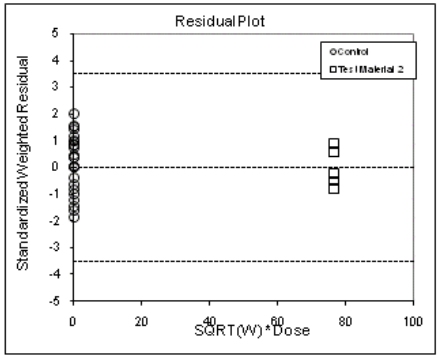
Test Material 1
Midvale Slag



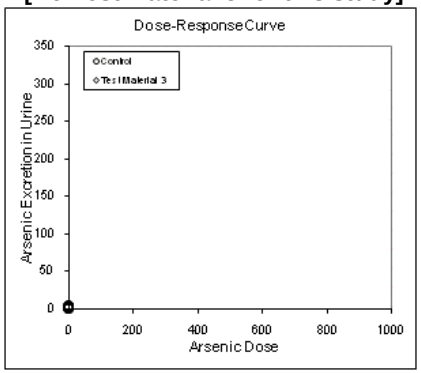


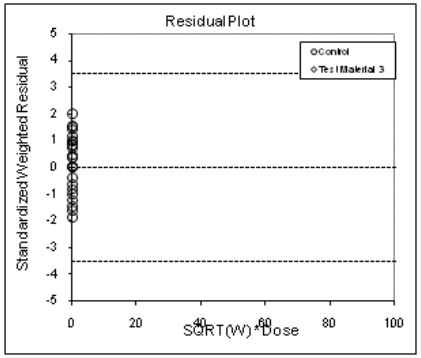
Test Material 2
Butte Soil





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.04	0.01
b3	0.02	0.01
b4	–	–
Covariance (b1,b2)	0.0060	–
Covariance (b1,b3)	0.0179	–
Covariance (b1,b4)	–	–
Degrees of Freedom	90	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	511.95	3	170.65
Error	138.22	89	1.55
Total	650.17	92	7.07

Statistic	Estimate
F	109.884
p	< 0.001
Adjusted R^2	0.7802

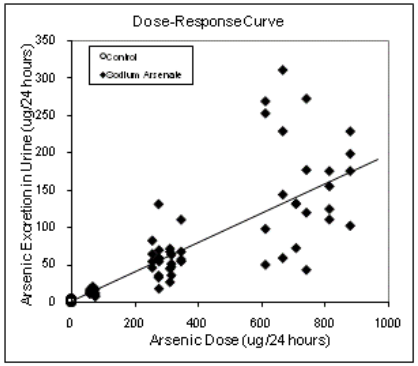
RBA and Uncertainty

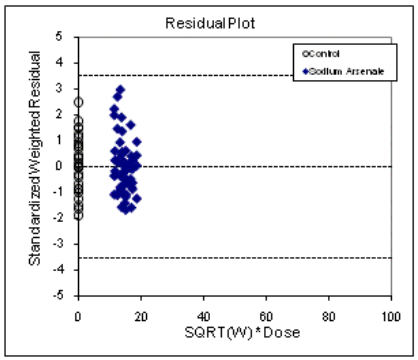
	Test Material 1	Test Material 2	Test Material 3
RBA	0.20	0.09	–
Lower bound[b]	0.12	0.03	–
Upper bound[b]	0.28	0.16	–
Standard Error[b]	0.048	0.039	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

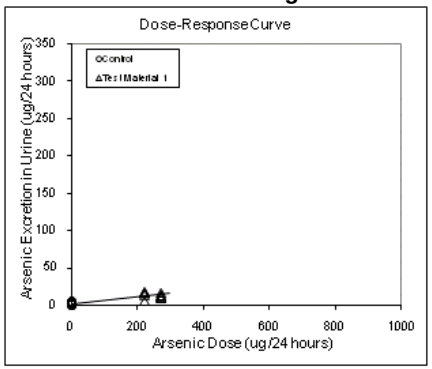
Figure 4c - All Data
Phase II Experiment 6
All Days (Day 7, 14)

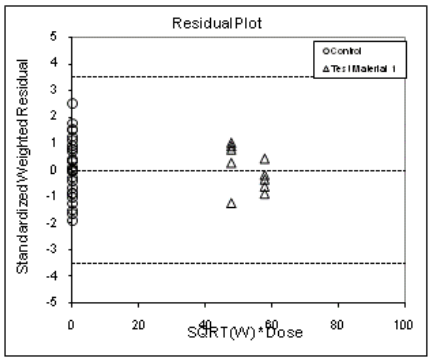
Reference Material
Sodium Arsenate*



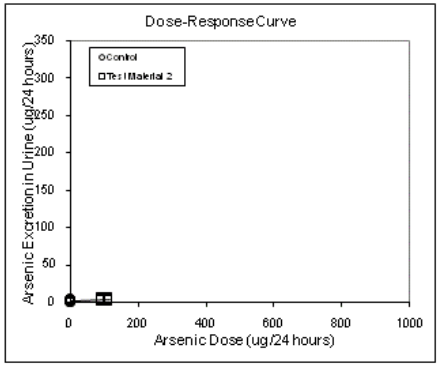


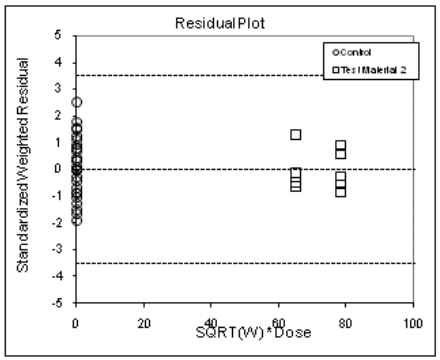
Test Material 1
Midvale Slag



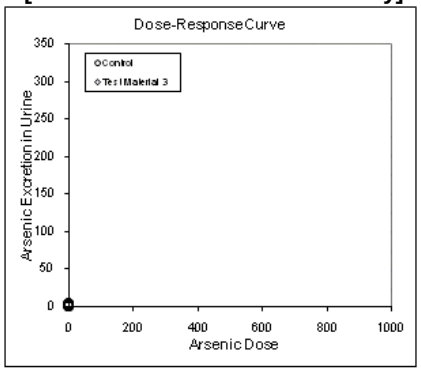


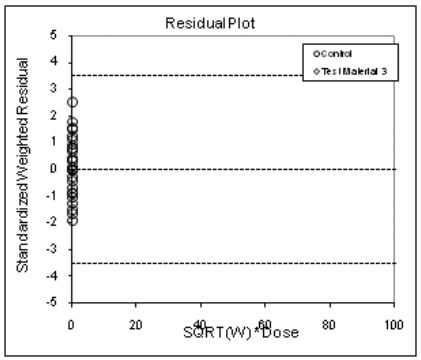
Test Material 2
Butte Soil





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.0	0.2
b1	0.20	0.01
b2	0.04	0.01
b3	0.02	0.01
b4	–	–
Covariance (b1,b2)	0.0068	–
Covariance (b1,b3)	0.0209	–
Covariance (b1,b4)	–	–
Degrees of Freedom	287	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	541.71	3	180.57
Error	155.97	102	1.53
Total	697.68	105	6.64

Statistic	Estimate
F	118.087
p	< 0.001
Adjusted R^2	0.7699

RBA and Uncertainty

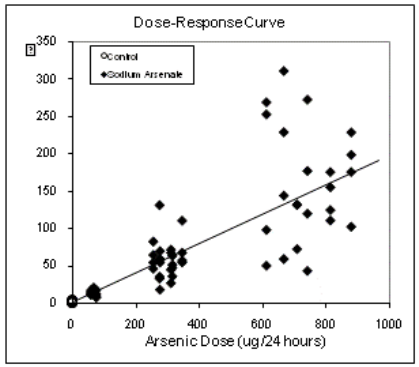
	Test Material 1	Test Material 2	Test Material 3
RBA	0.23	0.09	–
Lower bound[b]	0.17	0.04	–
Upper bound[b]	0.30	0.14	–
Standard Error[b]	0.040	0.031	–

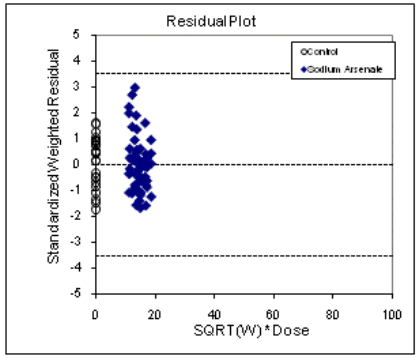
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 5a - All Data

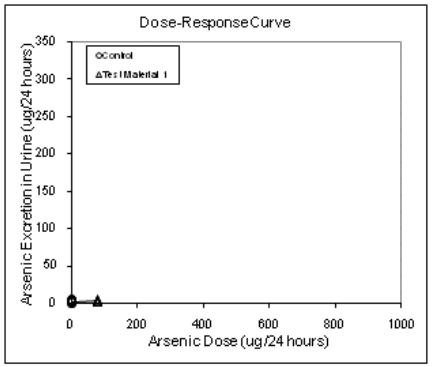
Phase II Experiment 7
Day 7

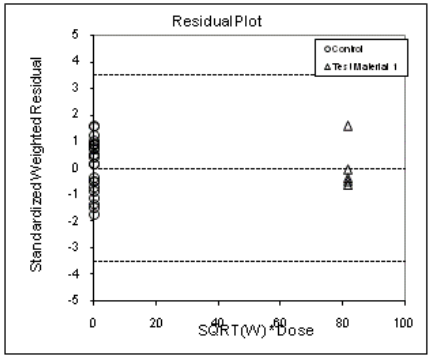
Reference Material
Sodium Arsenate*



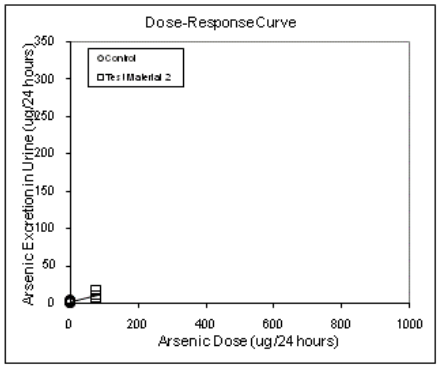


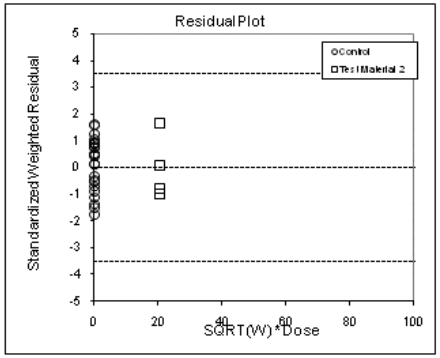
Test Material 1 - California Gulch
Phase I Residential Soil



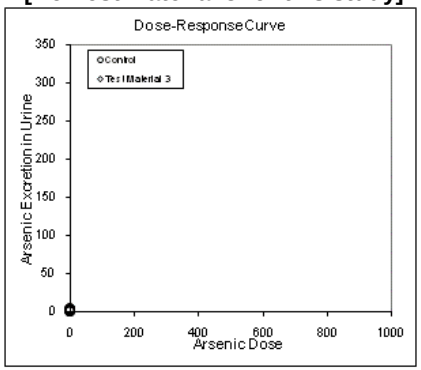


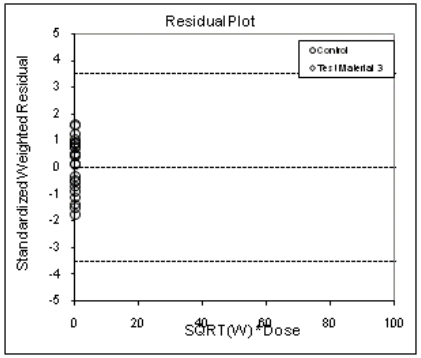
Test Material 2
California Gulch Fe/Mn PbO





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.01	0.01
b3	0.11	0.03
b4	–	–
Covariance (b1,b2)	0.0243	–
Covariance (b1,b3)	0.0060	–
Covariance (b1,b4)	–	–
Degrees of Freedom	88	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	501.52	3	167.17
Error	136.50	87	1.57
Total	638.02	90	7.09

Statistic	Estimate
F	106.551
p	< 0.001
Adjusted R^2	0.7787

RBA and Uncertainty

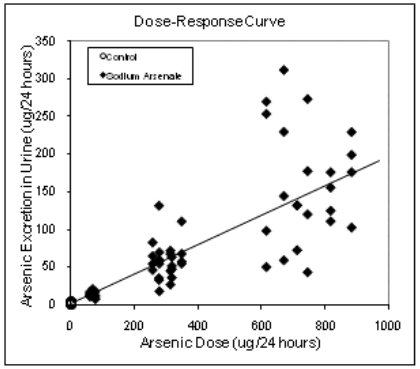
	Test Material 1	Test Material 2	Test Material 3
RBA	0.05	0.57	–
Lower bound[b]	-0.02	0.31	–
Upper bound[b]	0.11	0.85	–
Standard Error[b]	0.037	0.160	–

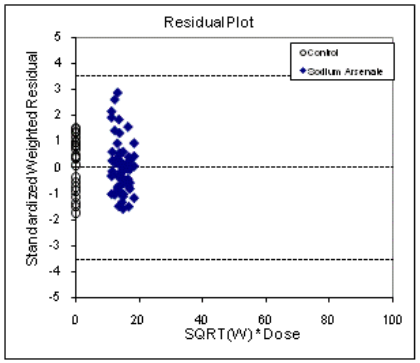
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 5b - All Data
Phase II Experiment 7

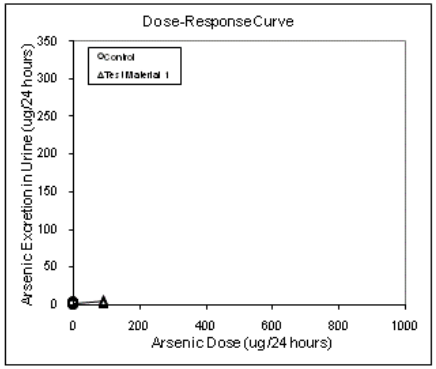
Day 14

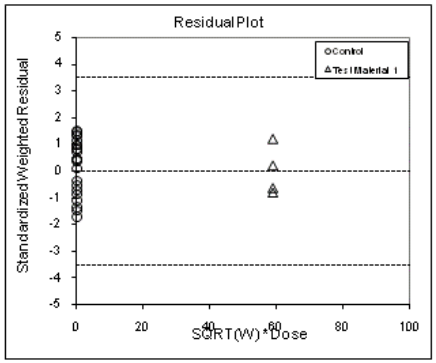
Reference Material Sodium Arsenate*



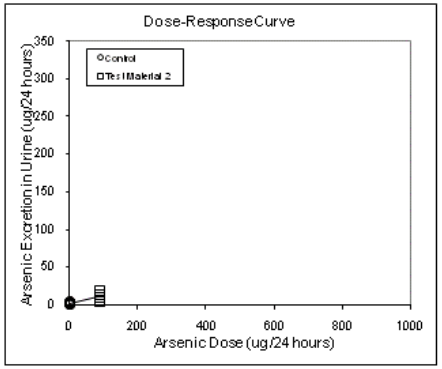


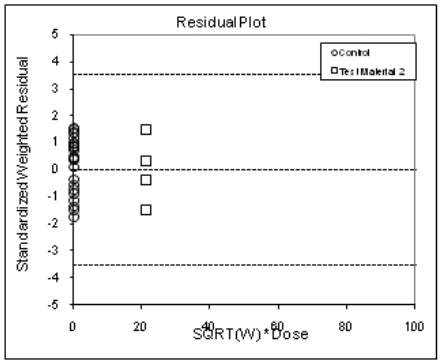
Test Material 1 – California Gulch Phase ! Residential Soil



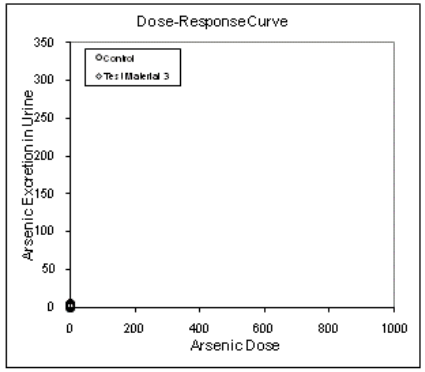


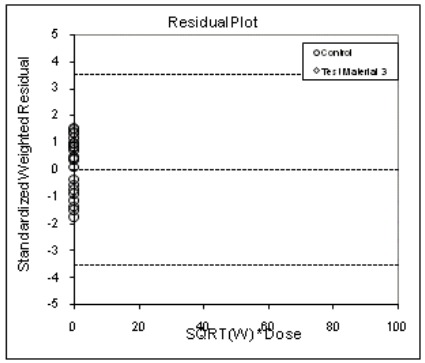
Test Material 2 California Gulch Fe/Mn PbO





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.03	0.01
b3	0.11	0.03
b4	–	–
Covariance (b1,b2)	0.0158	–
Covariance (b1,b3)	0.0059	–
Covariance (b1,b4)	–	–
Degrees of Freedom	86	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	507.31	3	169.10
Error	141.76	85	1.67
Total	649.07	88	7.38

Statistic	Estimate
F	101.397
p	< 0.001
Adjusted R^2	0.7739

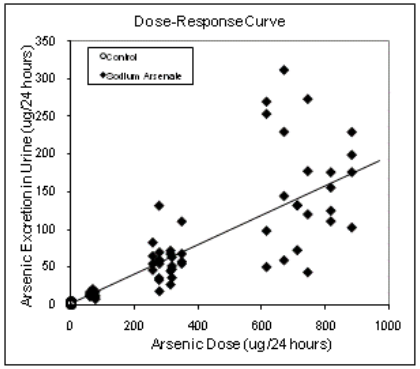
RBA and Uncertainty

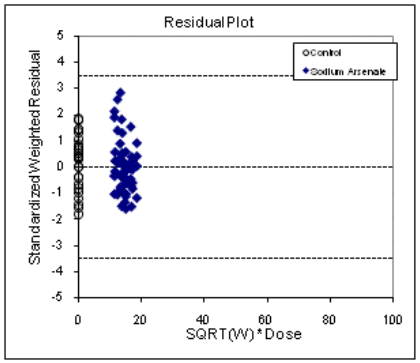
	Test Material 1	Test Material 2	Test Material 3
RBA	0.13	0.57	–
Lower bound[b]	0.03	0.31	–
Upper bound[b]	0.23	0.84	–
Standard Error[b]	0.057	0.159	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

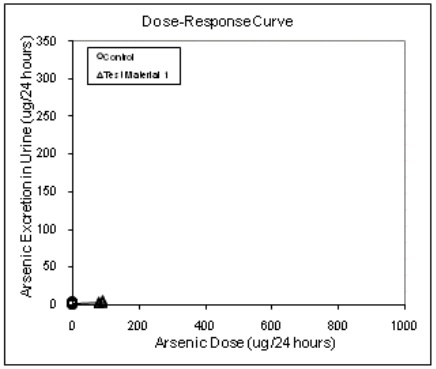
Figure 5c - All Data
Phase II Experiment 7
All Days (Day 7, 14)

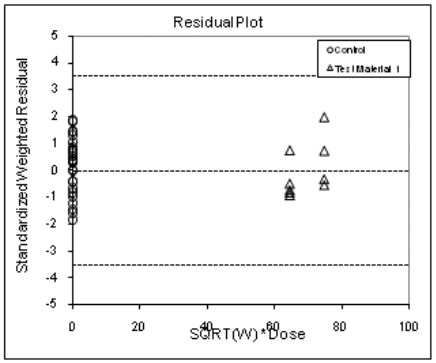
Reference Material Sodium Arsenate*



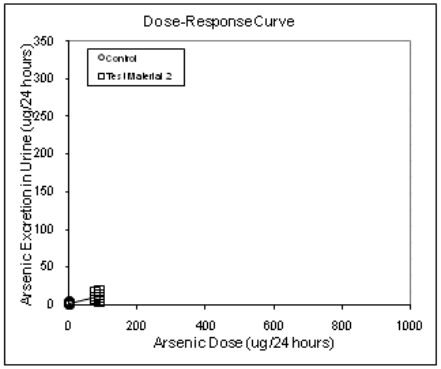


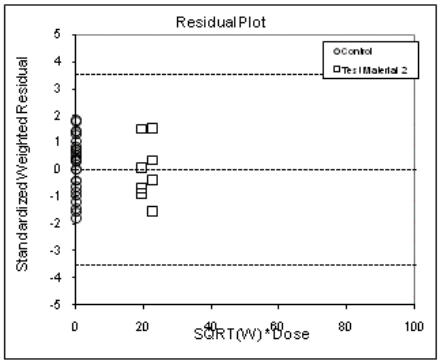
Test Material 1 – California Gulch Phase I Residential Soil



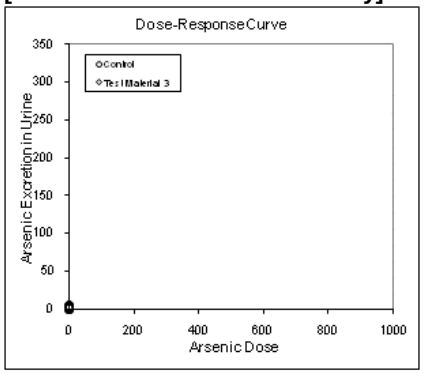


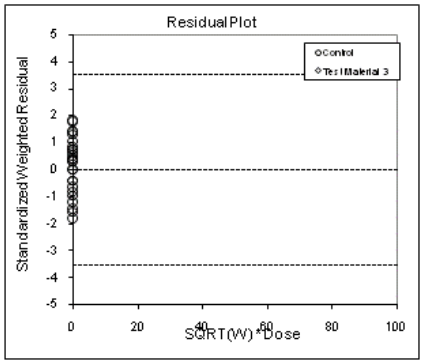
Test Material 2 California Gulch Fe/Mn PbO





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.0	0.2
b1	0.20	0.01
b2	0.02	0.01
b3	0.11	0.02
b4	–	–
Covariance (b1,b2)	0.0259	–
Covariance (b1,b3)	0.0080	–
Covariance (b1,b4)	–	–
Degrees of Freedom	279	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	524.53	3	174.84
Error	165.14	98	1.69
Total	689.68	101	6.83

Statistic	Estimate
F	103.758
p	< 0.001
Adjusted R^2	0.7532

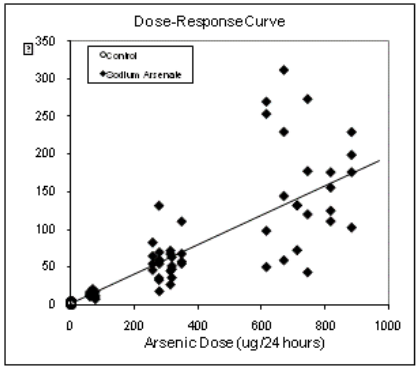
RBA and Uncertainty

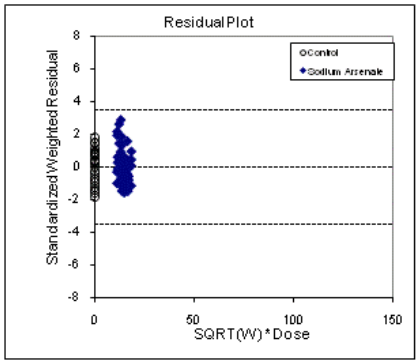
	Test Material 1	Test Material 2	Test Material 3
RBA	0.08	0.57	–
Lower bound[b]	0.03	0.38	–
Upper bound[b]	0.14	0.77	–
Standard Error[b]	0.034	0.117	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

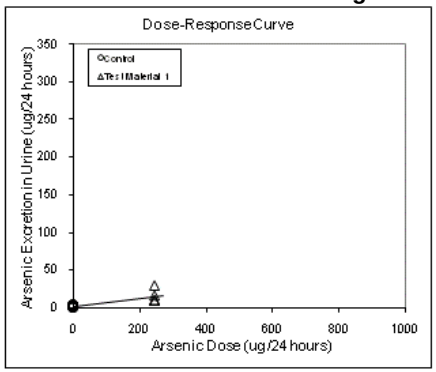
Figure 6a - All Data
Phase II Experiment 8
Day 7

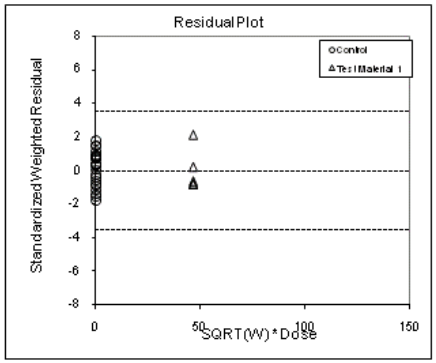
Reference Material
Sodium Arsenate*



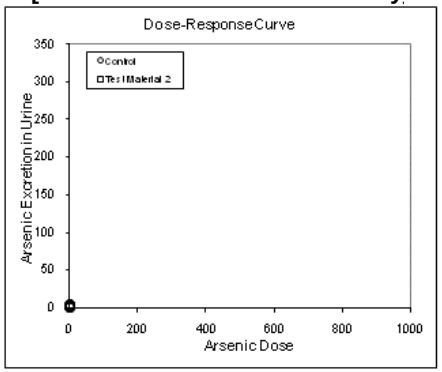


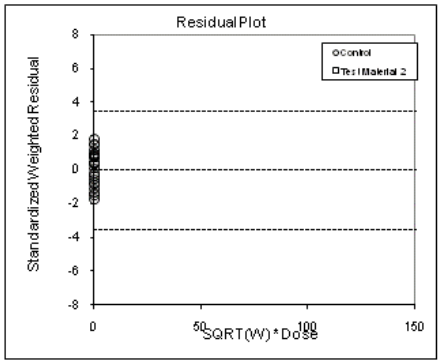
Test Material 1
California Gulch AV Slag



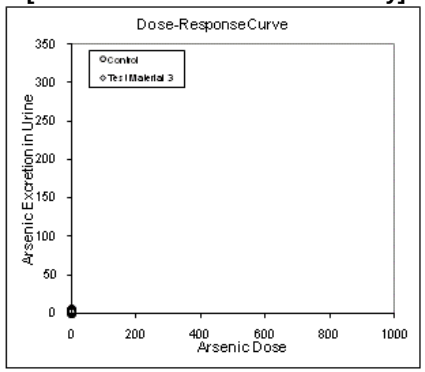


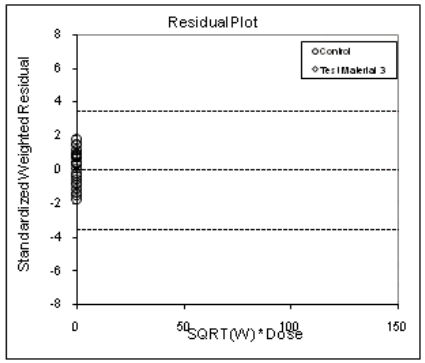
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.05	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0049	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	86	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	508.89	2	254.44
Error	141.05	85	1.66
Total	649.94	87	7.47

Statistic	Estimate
F	153.329
p	< 0.001
Adjusted R^2	0.7779

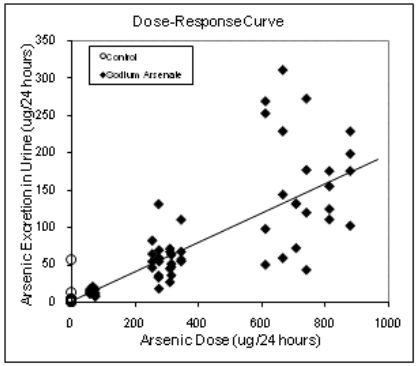
RBA and Uncertainty

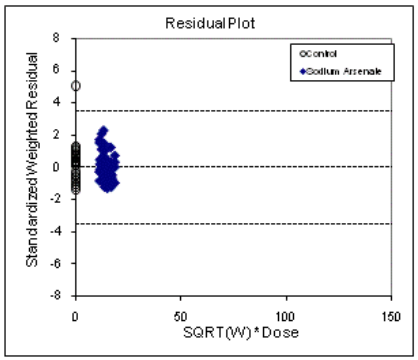
	Test Material 1	Test Material 2	Test Material 3
RBA	0.27	–	–
Lower bound[b]	0.17	–	–
Upper bound[b]	0.38	–	–
Standard Error[b]	0.065	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

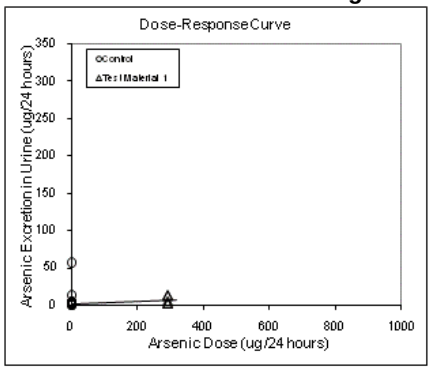
Figure 6b - All Data
Phase II Experiment 8
Day 14

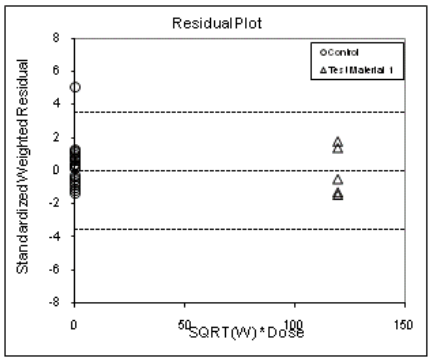
Reference Material
Sodium Arsenate*



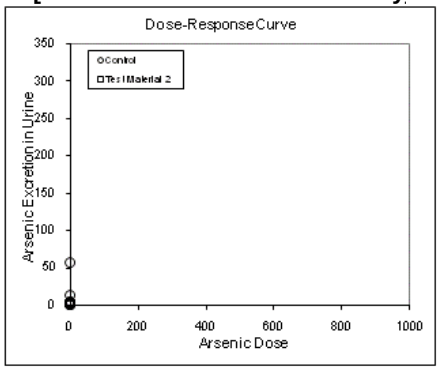


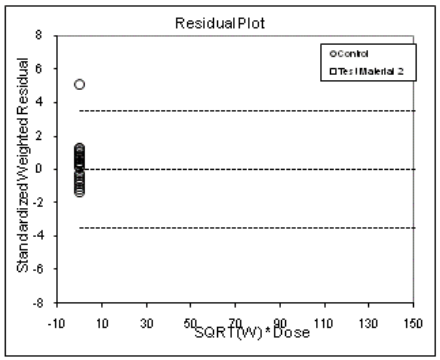
Test Material 1
California Gulch AV Slag



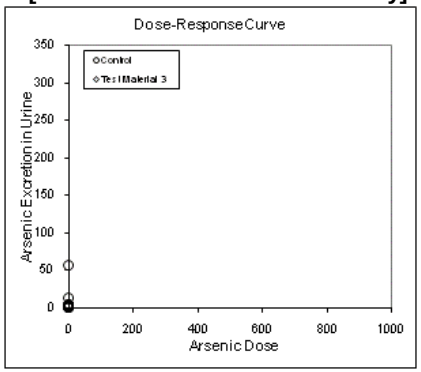


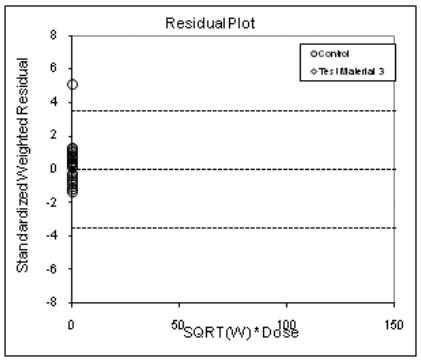
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.3
b1	0.20	0.01
b2	0.02	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0116	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	85	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	498.07	2	249.03
Error	210.21	84	2.50
Total	708.27	86	8.24

Statistic	Estimate
F	99.515
p	< 0.001
Adjusted R^2	0.6961

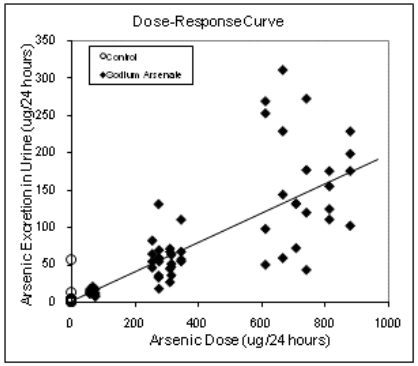
RBA and Uncertainty

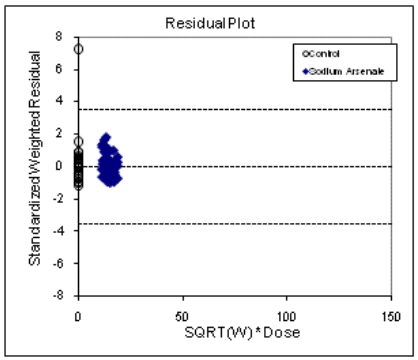
	Test Material 1	Test Material 2	Test Material 3
RBA	0.09	–	–
Lower bound[b]	0.03	–	–
Upper bound[b]	0.14	–	–
Standard Error[b]	0.031	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

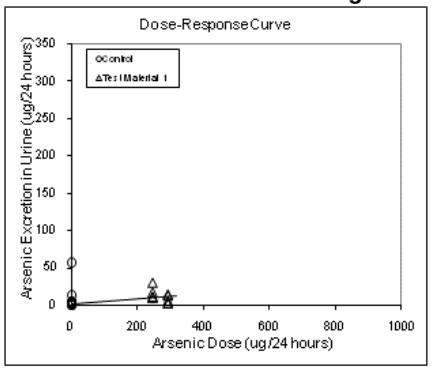
Figure 6c - All Data
Phase II Experiment 8
All Days (Day 7, 14)

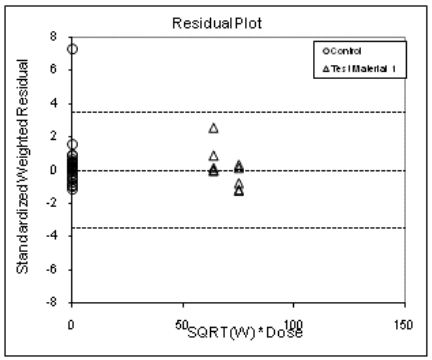
Reference Material
Sodium Arsenate*



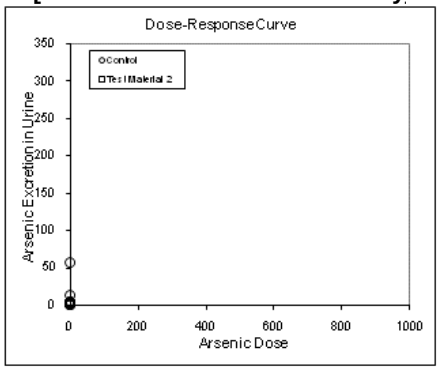


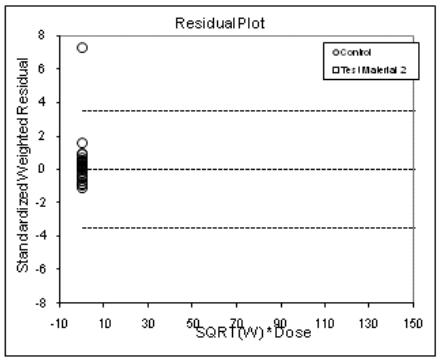
Test Material 1
California Gulch AV Slag



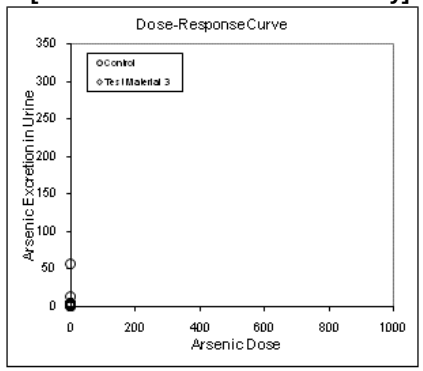


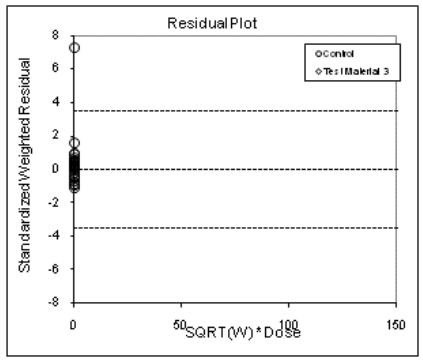
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.0	0.3
b1	0.20	0.02
b2	0.03	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0102	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	270	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	523.01	2	261.51
Error	395.57	94	4.21
Total	918.58	96	9.57

Statistic	Estimate
F	62.142
p	< 0.001
Adjusted R^2	0.5602

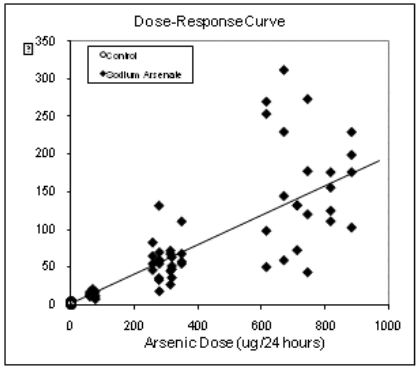
RBA and Uncertainty

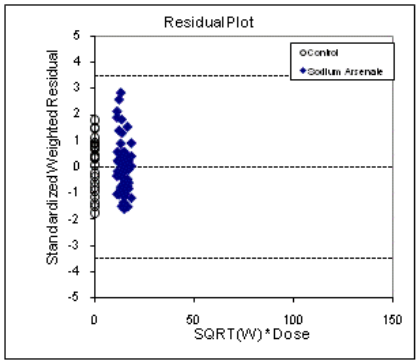
	Test Material 1	Test Material 2	Test Material 3
RBA	0.16	–	–
Lower bound[b]	0.08	–	–
Upper bound[b]	0.25	–	–
Standard Error[b]	0.050	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

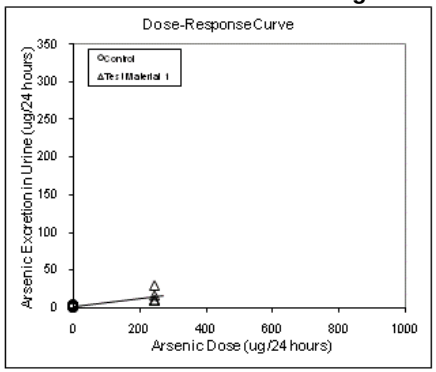
Figure 6a - Outliers Excluded
Phase II Experiment 8
Day 7

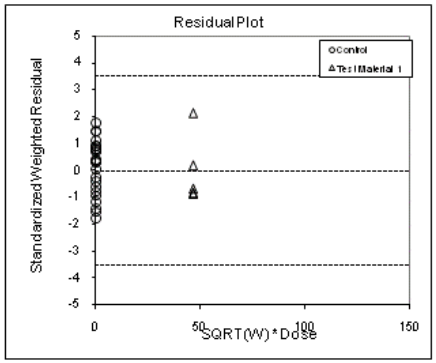
Reference Material
Sodium Arsenate*



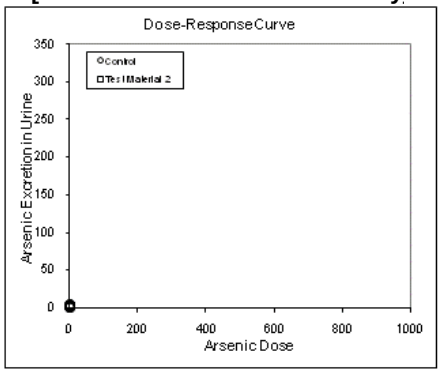


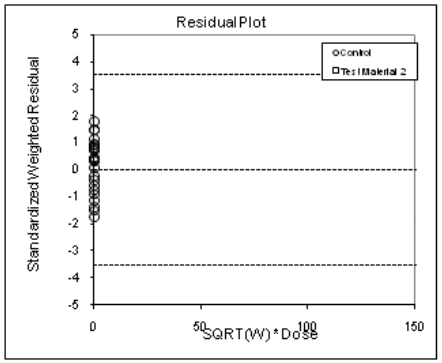
Test Material 1
California Gulch AV Slag



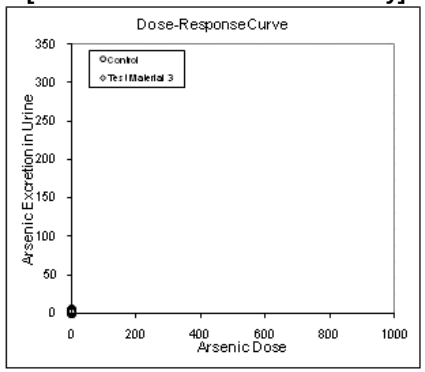


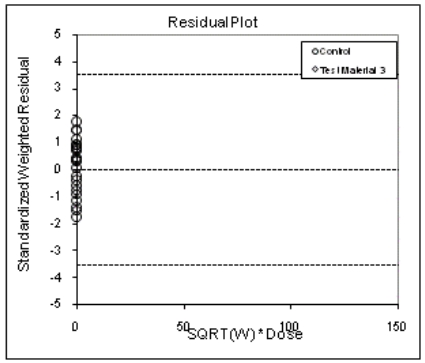
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.05	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0049	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	86	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	508.89	2	254.44
Error	141.05	85	1.66
Total	649.94	87	7.47

Statistic	Estimate
F	153.329
p	< 0.001
Adjusted R^2	0.7779

RBA and Uncertainty

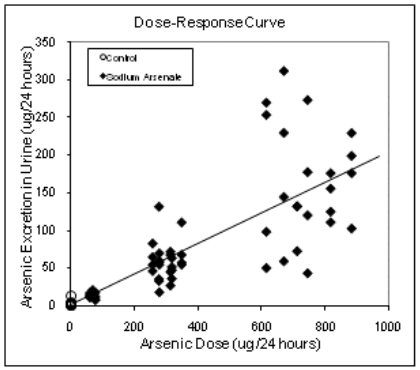
	Test Material 1	Test Material 2	Test Material 3
RBA	0.27	–	–
Lower bound[b]	0.17	–	–
Upper bound[b]	0.38	–	–
Standard Error[b]	0.065	–	–

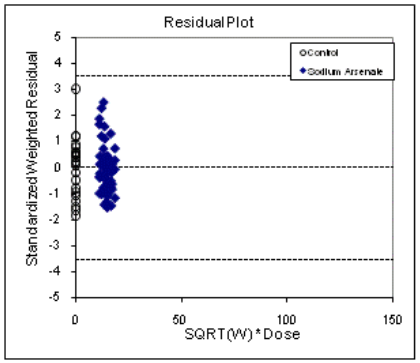
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 6b - Outliers Excluded

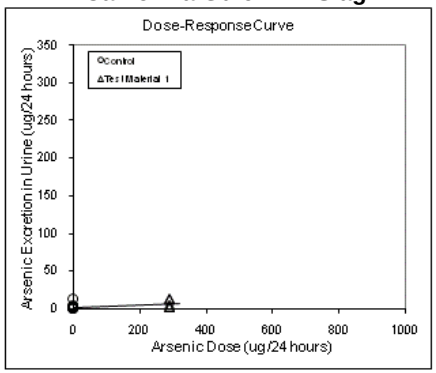
Phase II Experiment 8
Day 14

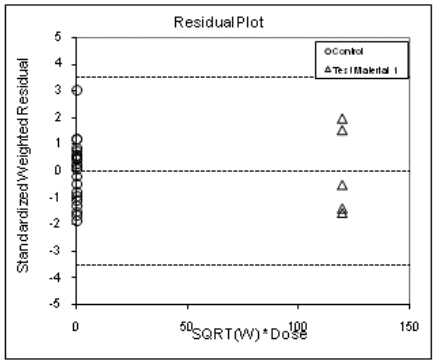
Reference Material
Sodium Arsenate*



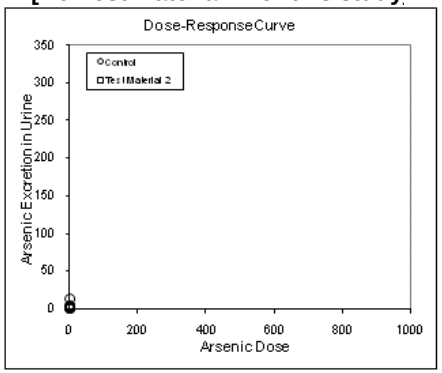


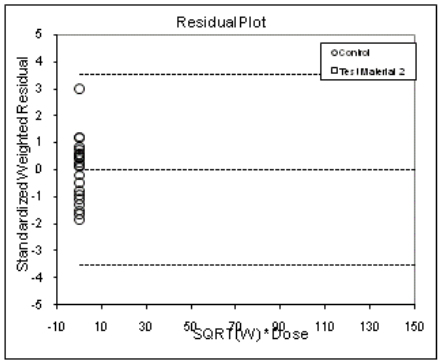
Test Material 1
California Gulch AV Slag



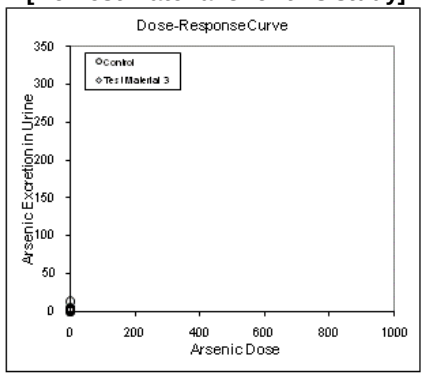


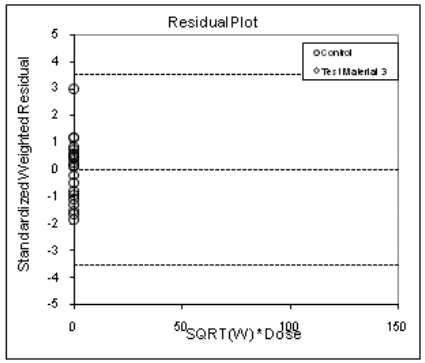
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.1	0.7
b1	0.20	0.01
b2	0.02	0.00
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0704	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	84	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	534.07	2	267.04
Error	169.12	83	2.04
Total	703.19	85	8.27

Statistic	Estimate
F	131.057
p	< 0.001
Adjusted R^2	0.7537

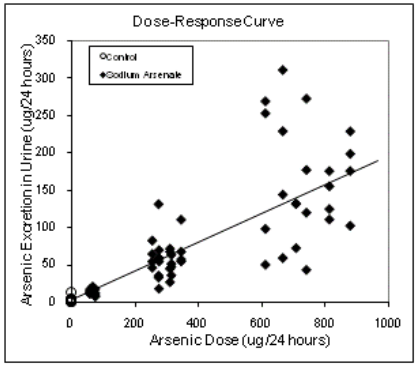
RBA and Uncertainty

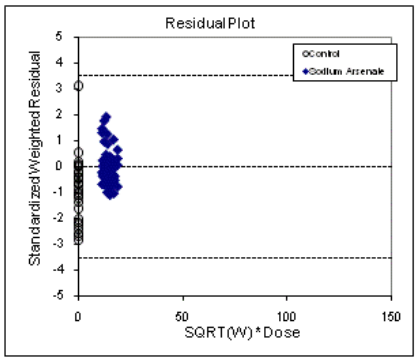
	Test Material 1	Test Material 2	Test Material 3
RBA	0.08	–	–
Lower bound[b]	0.04	–	–
Upper bound[b]	0.12	–	–
Standard Error[b]	0.024	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

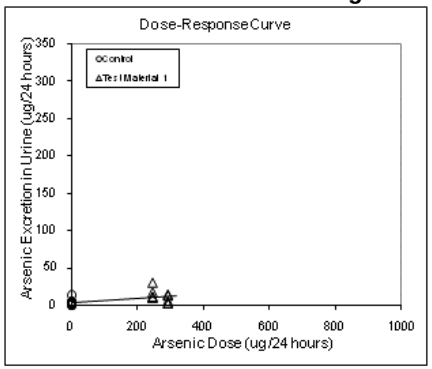
Figure 6c - Outliers Excluded
Phase II Experiment 8
All Days (Day 7, 14)

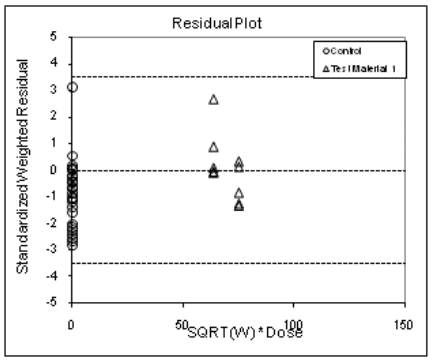
Reference Material
Sodium Arsenate*



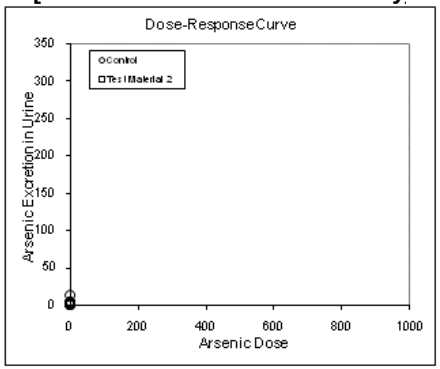


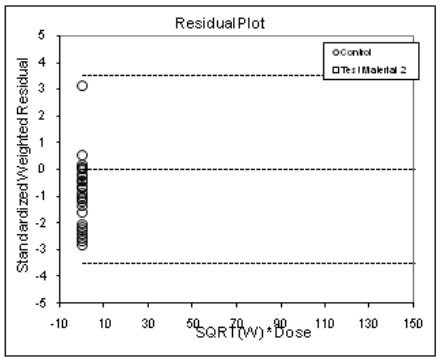
Test Material 1
California Gulch AV Slag



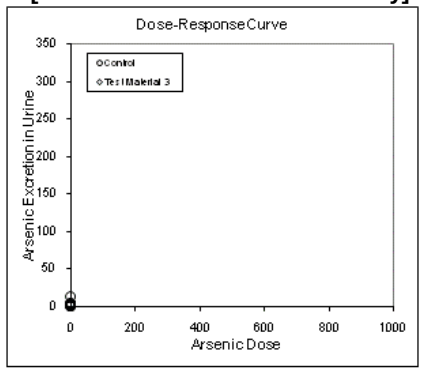


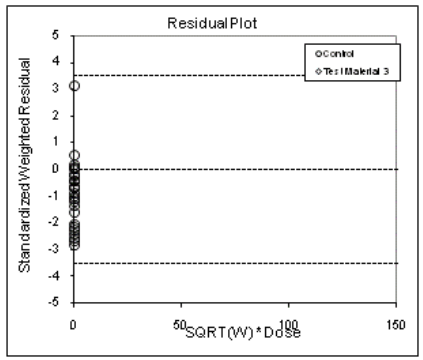
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	3.8	0.9
b1	0.19	0.01
b2	0.02	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0634	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	268	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	621.46	2	310.73
Error	358.03	93	3.85
Total	979.49	95	10.31

Statistic	Estimate
F	80.712
p	< 0.001
Adjusted R^2	0.6266

RBA and Uncertainty

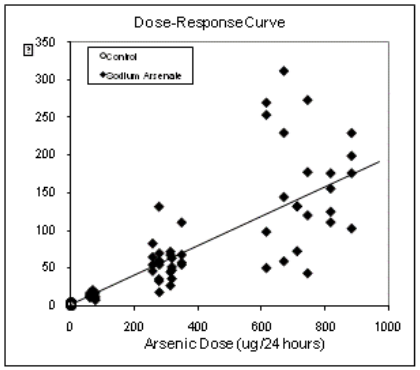
	Test Material 1	Test Material 2	Test Material 3
RBA	0.13	–	–
Lower bound[b]	0.07	–	–
Upper bound[b]	0.19	–	–
Standard Error[b]	0.037	–	–

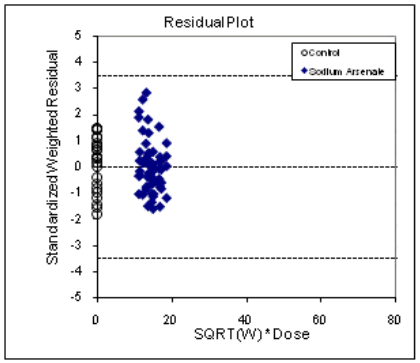
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 7a - All Data

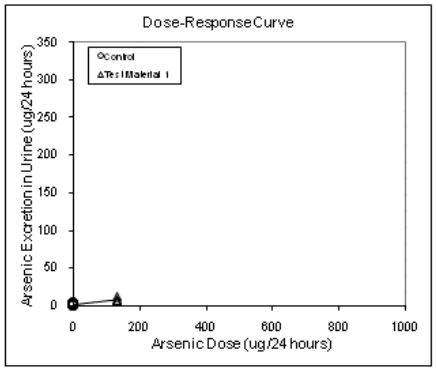
Phase II Experiment 9
Day 7

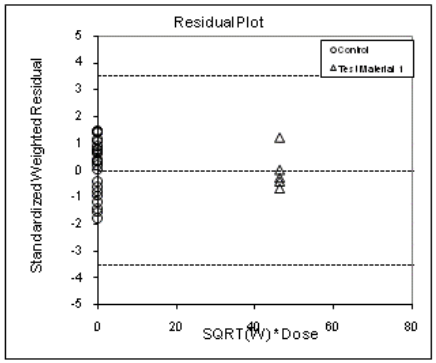
Reference Material
Sodium Arsenate*



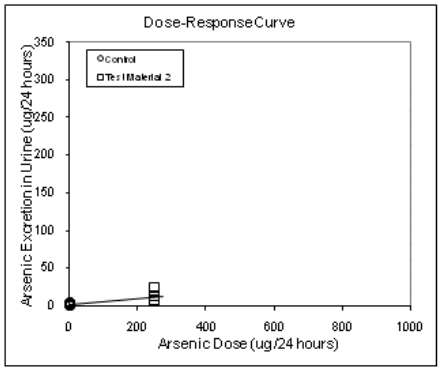


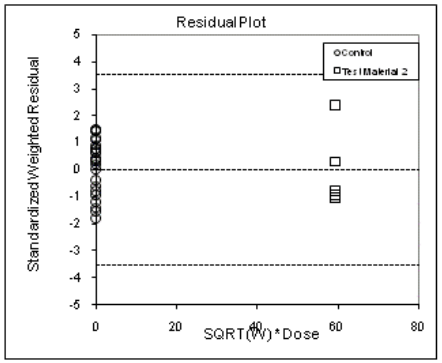
Test Material 1
Palmerton Location 2



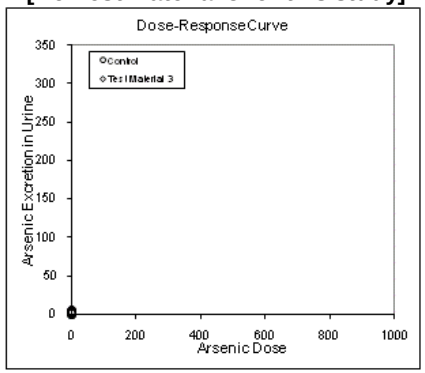


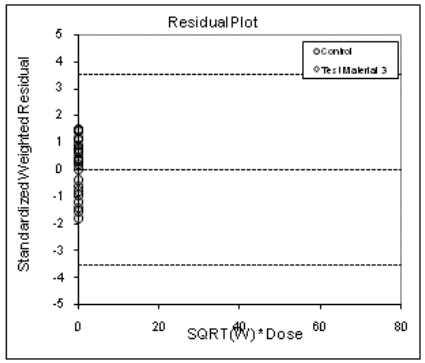
Test Material 2
Palmerton Location 4





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.05	0.01
b3	0.04	0.01
b4	–	–
Covariance (b1,b2)	0.0093	–
Covariance (b1,b3)	0.0063	–
Covariance (b1,b4)	–	–
Degrees of Freedom	90	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	524.57	3	174.86
Error	149.79	89	1.68
Total	674.36	92	7.33

Statistic	Estimate
F	103.892
p	< 0.001
Adjusted R^2	0.7704

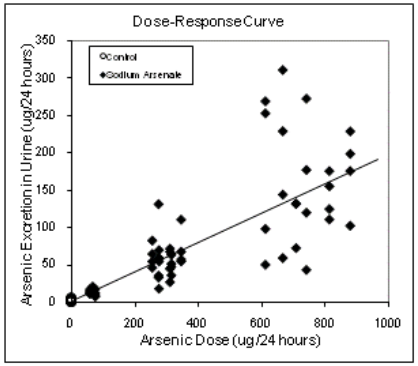
RBA and Uncertainty

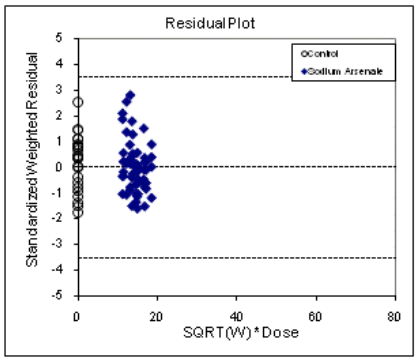
	Test Material 1	Test Material 2	Test Material 3
RBA	0.23	0.20	–
Lower bound[b]	0.12	0.12	–
Upper bound[b]	0.34	0.29	–
Standard Error[b]	0.066	0.052	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

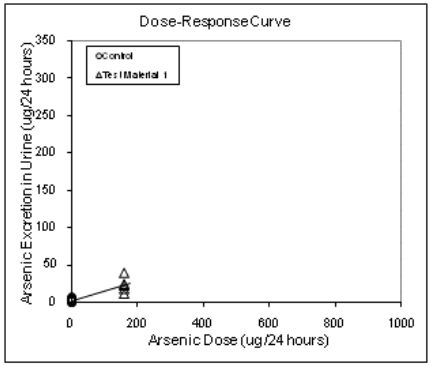
Figure 7b - All Data
Phase II Experiment 9
Day 14

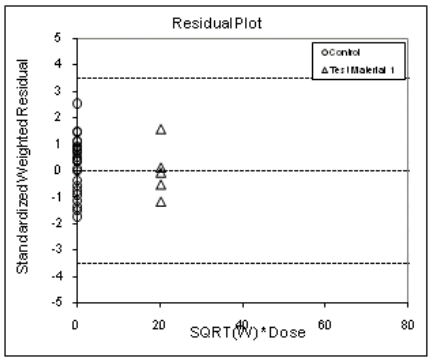
Reference Material
Sodium Arsenate*



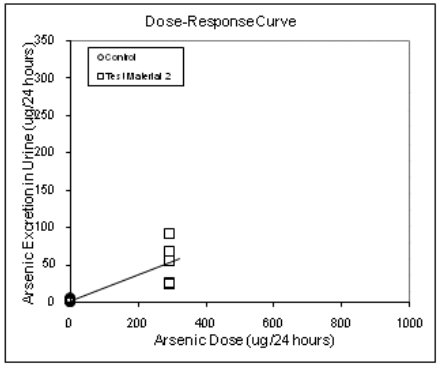


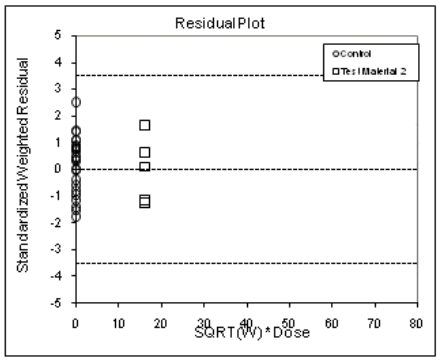
Test Material 1
Palmerton Location 2



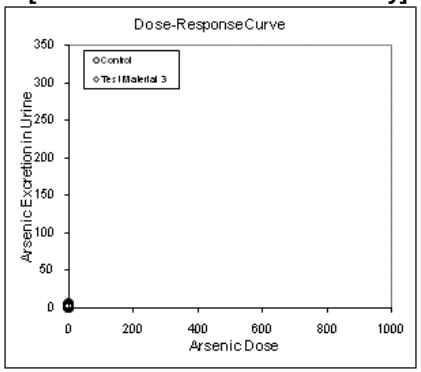


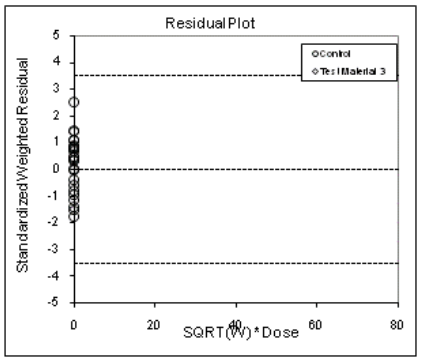
Test Material 2
Palmerton Location 4





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.9	0.2
b1	0.20	0.01
b2	0.13	0.03
b3	0.18	0.04
b4	–	–
Covariance (b1,b2)	0.0034	–
Covariance (b1,b3)	0.0015	–
Covariance (b1,b4)	–	–
Degrees of Freedom	90	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	553.90	3	184.63
Error	154.14	89	1.73
Total	708.04	92	7.70

Statistic	Estimate
F	106.605
p	< 0.001
Adjusted R^2	0.7750

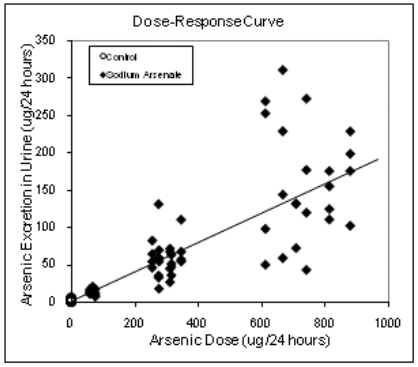
RBA and Uncertainty

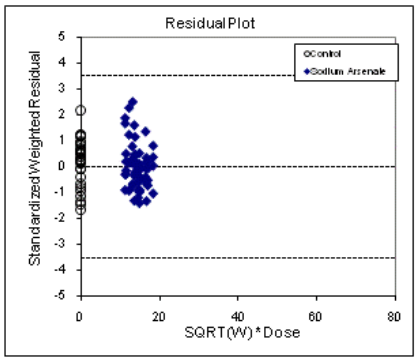
	Test Material 1	Test Material 2	Test Material 3
RBA	0.67	0.91	–
Lower bound[b]	0.42	0.59	–
Upper bound[b]	0.94	1.24	–
Standard Error[b]	0.155	0.193	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

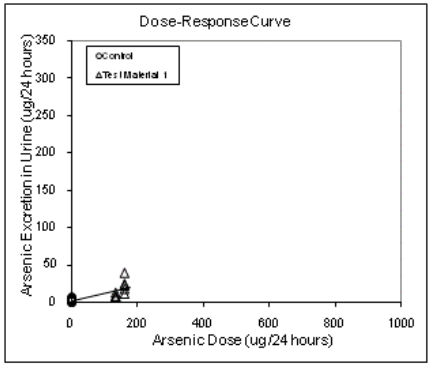
Figure 7c - All Data
Phase II Experiment 9
All Days (Day 7, 14)

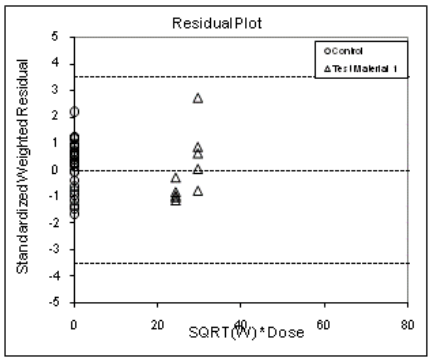
Reference Material
Sodium Arsenate*



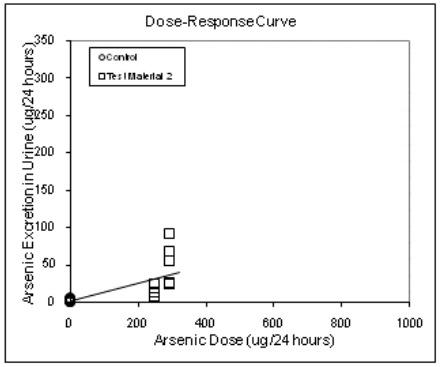


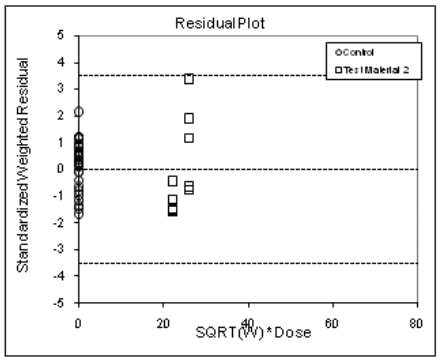
Test Material 1
Palmerton Location 2



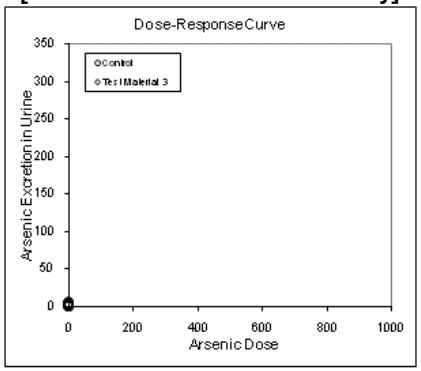


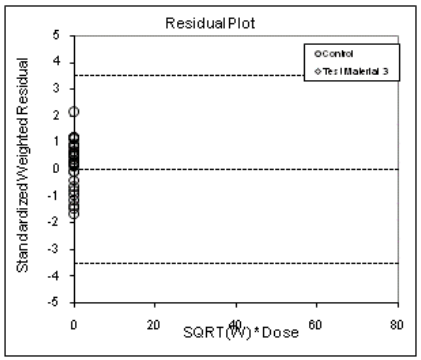
Test Material 2
Palmerton Location 4





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary ofFitting[a]

Parameter	Estimate	Standard Error
a	2.0	0.2
b1	0.20	0.01
b2	0.10	0.02
b3	0.12	0.02
b4	–	–
Covariance (b1,b2)	0.0065	–
Covariance (b1,b3)	0.0032	–
Covariance (b1,b4)	–	–
Degrees of Freedom	291	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	622.96	3	207.65
Error	230.32	104	2.21
Total	853.28	107	7.97

Statistic	Estimate
F	93.766
p	< 0.001
Adjusted R^2	0.7223

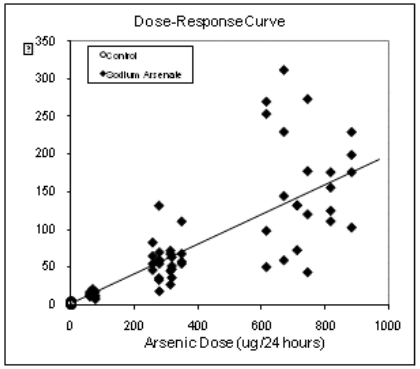
RBA and Uncertainty

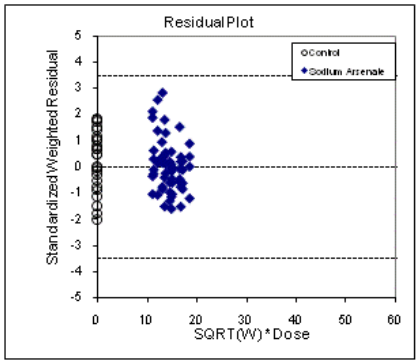
	Test Material 1	Test Material 2	Test Material 3
RBA	0.49	0.61	–
Lower bound[b]	0.34	0.44	–
Upper bound[b]	0.66	0.80	–
Standard Error[b]	0.096	0.108	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

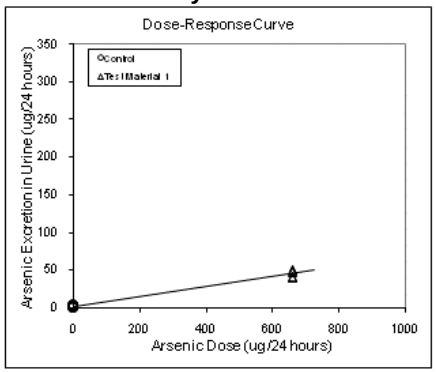
Figure 8a - All Data
Phase II Experiment 11
Day 7

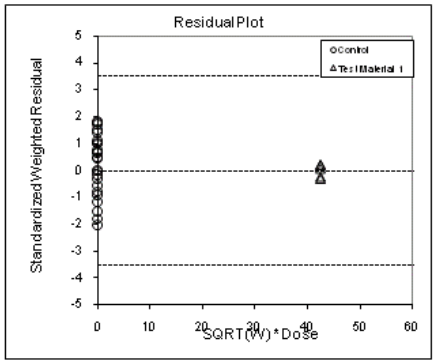
Reference Material
Sodium Arsenate*



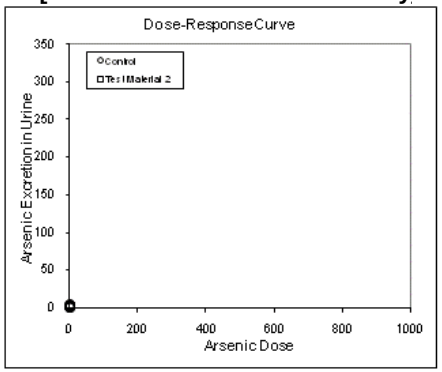


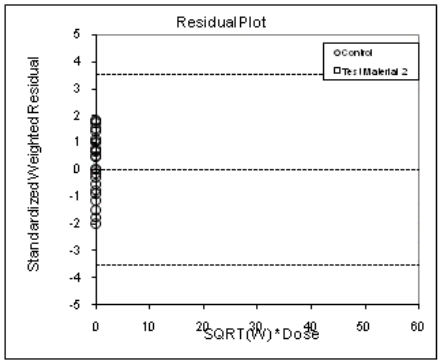
Test Material 1
Murray Smelter Soil



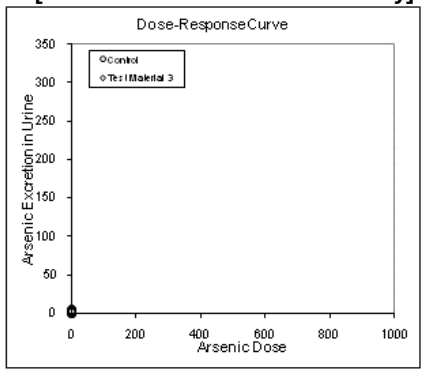


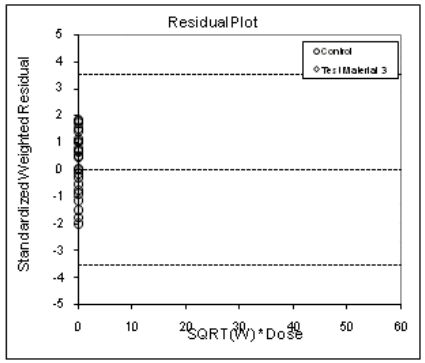
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.4	0.2
b1	0.20	0.01
b2	0.07	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0010	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	86	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	531.86	2	265.93
Error	144.23	85	1.70
Total	676.09	87	7.77

Statistic	Estimate
F	156.722
p	< 0.001
Adjusted R^2	0.7817

RBA and Uncertainty

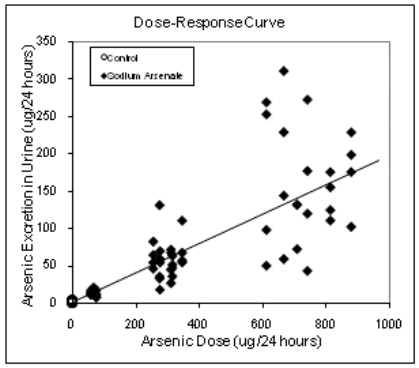
	Test Material 1	Test Material 2	Test Material 3
RBA	0.34	–	–
Lower bound[b]	0.23	–	–
Upper bound[b]	0.47	–	–
Standard Error[b]	0.072	–	–

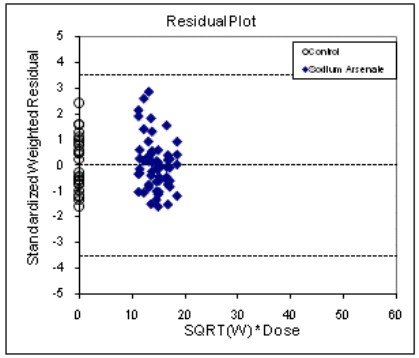
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 8b - All Data

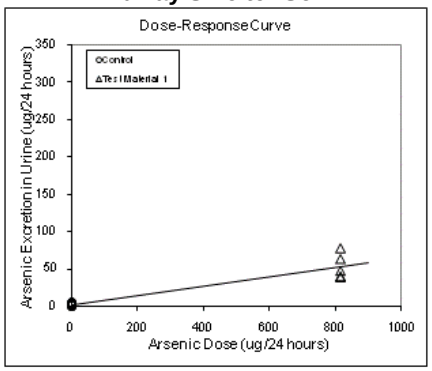
Phase II Experiment 11
Day 14

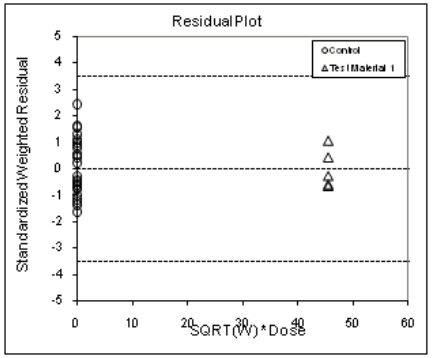
Reference Material
Sodium Arsenate*



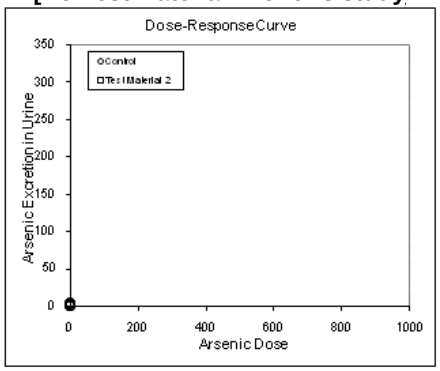


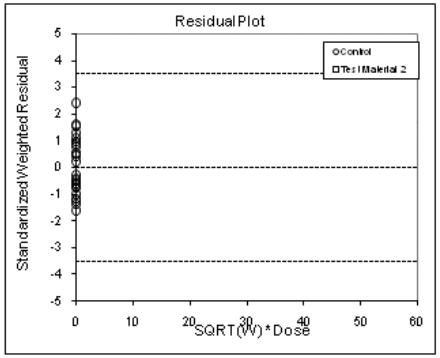
Test Material 1
Murray Smelter Soil



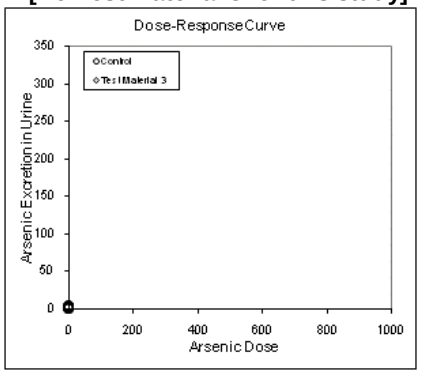


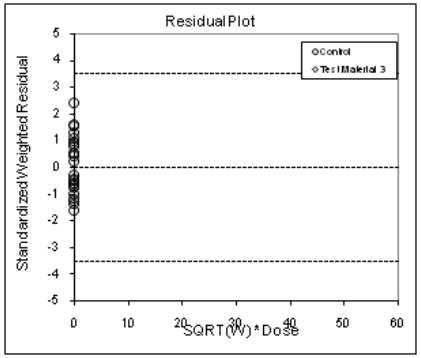
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.2
b1	0.20	0.01
b2	0.06	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0012	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	86	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	523.80	2	261.90
Error	139.15	85	1.64
Total	662.95	87	7.62

Statistic	Estimate
F	159.983
p	< 0.001
Adjusted R^2	0.7852

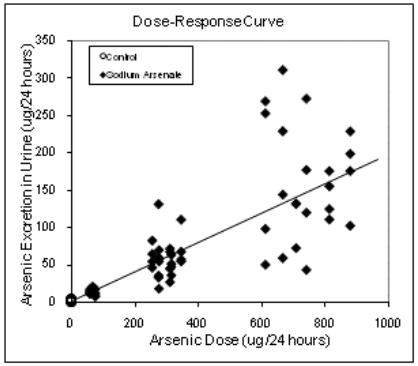
RBA and Uncertainty

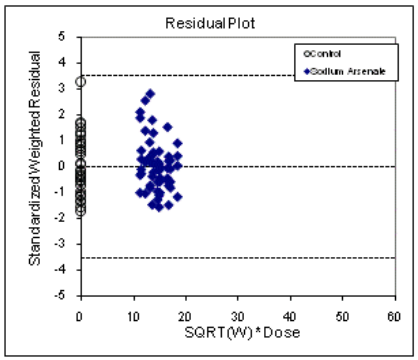
	Test Material 1	Test Material 2	Test Material 3
RBA	0.32	–	–
Lower bound[b]	0.21	–	–
Upper bound[b]	0.44	–	–
Standard Error[b]	0.067	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

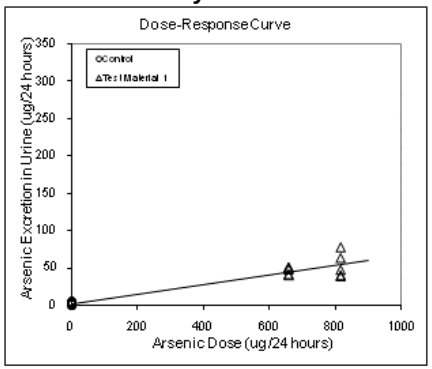
Figure 8c - All Data
Phase II Experiment 11
All Days (Day 7, 14)

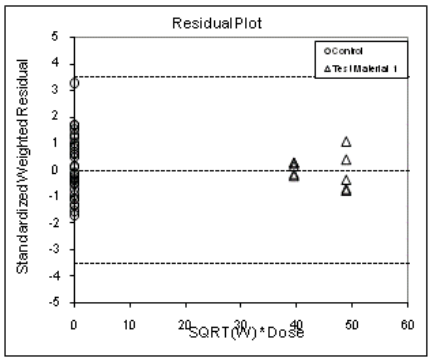
Reference Material
Sodium Arsenate*



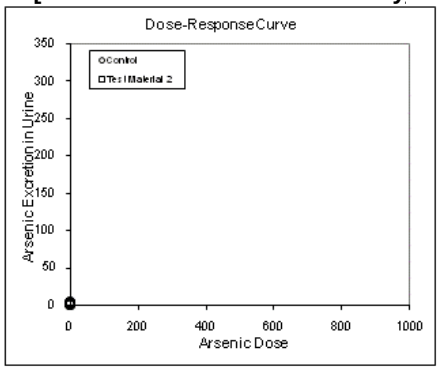


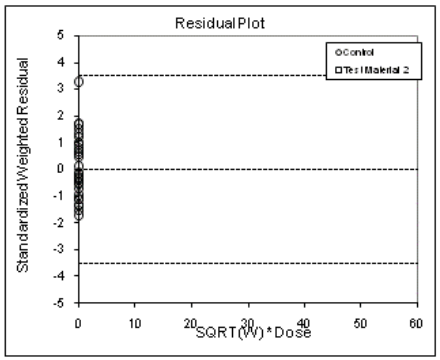
Test Material 1
Murray Smelter Soil



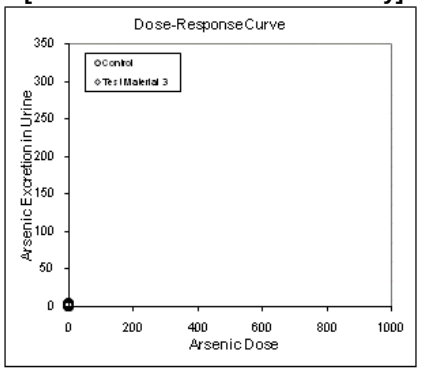


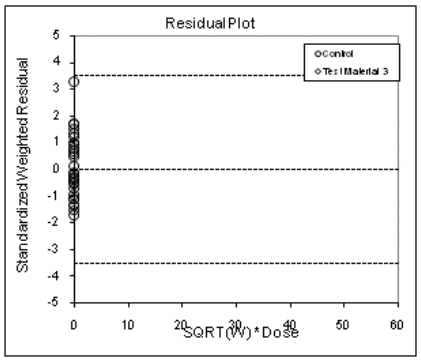
[No Test Material 2 for this study]





[No Test Material 3 for this study]





*Sodium arsenate was not administered in this study; data shown are combined from Phase II Experiments 10 and 15 (days 8, 11, and 14).

Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.6	0.2
b1	0.20	0.01
b2	0.07	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0012	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	272	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	570.32	2	285.16
Error	161.45	95	1.70
Total	731.77	97	7.54

Statistic	Estimate
F	167.793
p	< 0.001
Adjusted R^2	0.7747

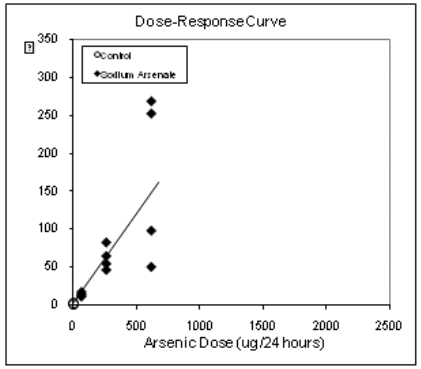
RBA and Uncertainty

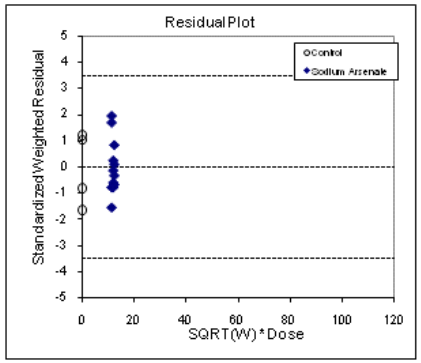
	Test Material 1	Test Material 2	Test Material 3
RBA	0.33	–	–
Lower bound[b]	0.25	–	–
Upper bound[b]	0.42	–	–
Standard Error[b]	0.051	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

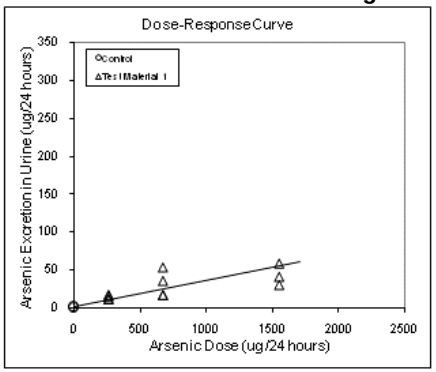
Figure 9a - All Data
Phase II Pilot 1 (Experiment 10)
Day 8

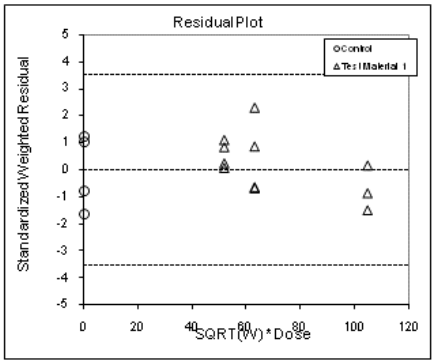
Reference Material
Sodium Arsenate



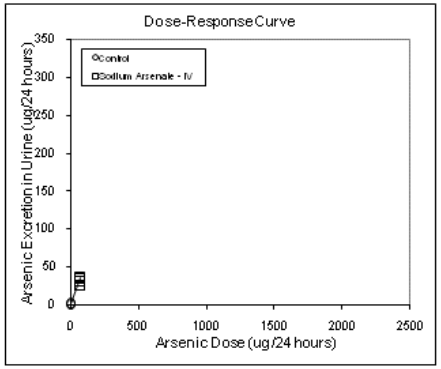


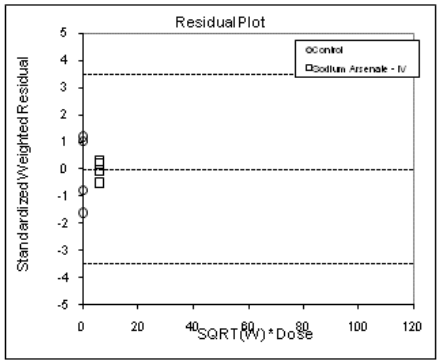
Test Material 1
California Gulch AV Slag



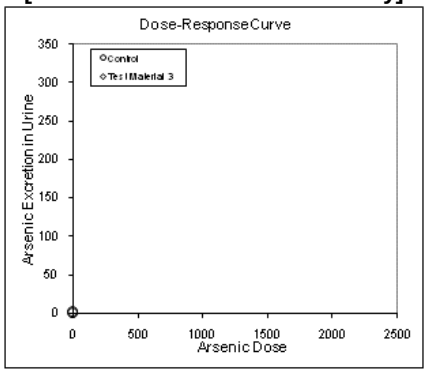


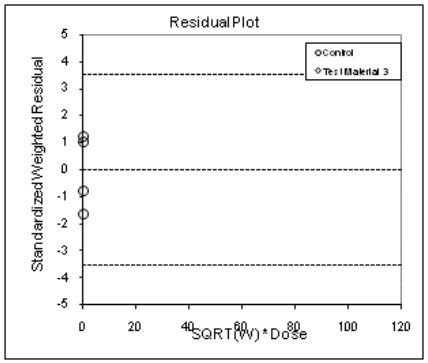
Sodium Arsenate - IV





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.8	0.4
b1	0.24	0.03
b2	0.04	0.01
b3	0.47	0.10
b4	–	–
Covariance (b1,b2)	0.0123	–
Covariance (b1,b3)	0.0064	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	193.82	3	64.61
Error	40.41	27	1.50
Total	234.23	30	7.81

Statistic	Estimate
F	43.166
p	< 0.001
Adjusted R^2	0.8083

RBA and Uncertainty

	Test Material 1
RBA	0.15
Lower bound[b]	0.11
Upper bound[b]	0.20
Standard	0.028

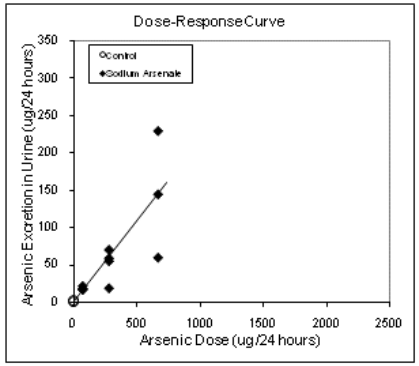
ABA and Uncertainty

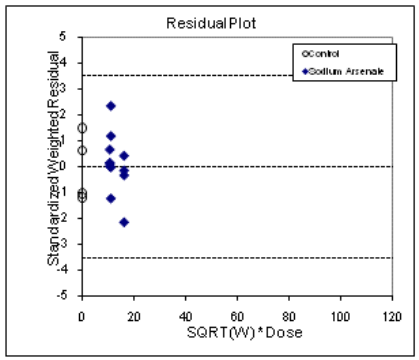
	Oral/IV
RBA	0.51
Lower bound[b]	0.34
Upper bound[b]	0.84
Standard Error[b]	0.129**

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

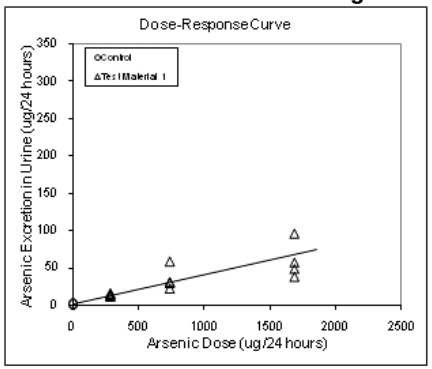
Figure 9b - All Data
Phase II Pilot 1 (Experiment 10)
Day 11

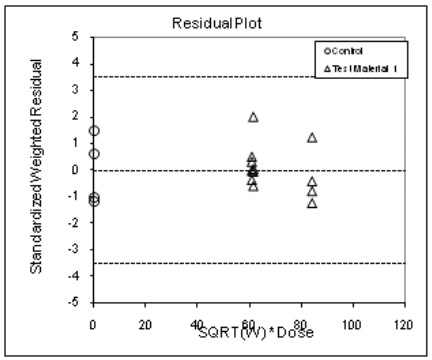
Reference Material
Sodium Arsenate



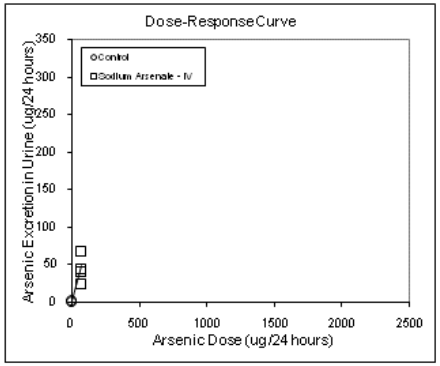


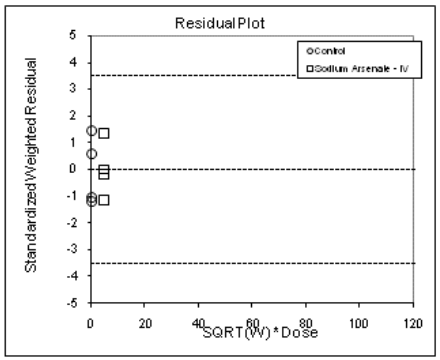
Test Material 1
California Gulch AV Slag



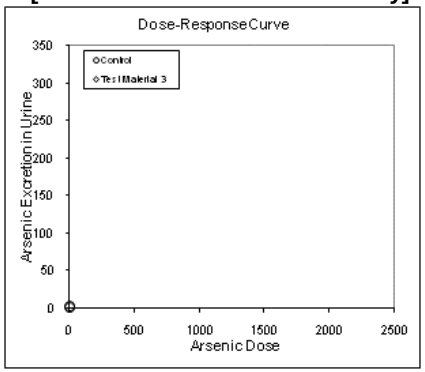


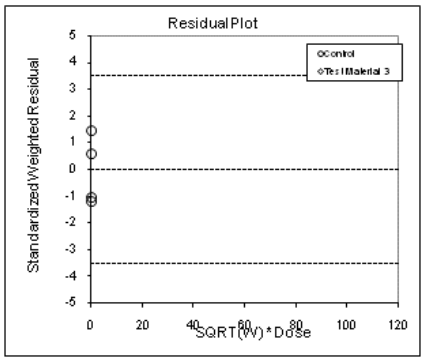
Sodium Arsenate - IV





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.5	0.4
b1	0.22	0.03
b2	0.04	0.01
b3	0.61	0.13
b4	–	–
Covariance (b1,b2)	0.0078	–
Covariance (b1,b3)	0.0028	–
Covariance (b1,b4)	–	–
Degrees of Freedom	29	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	213.33	3	71.11
Error	42.81	28	1.53
Total	256.14	31	8.26

Statistic	Estimate
F	46.505
p	< 0.001
Adjusted R^2	0.8149

RBA and Uncertainty

	Test Material 1
RBA	0.18
Lower bound[b]	0.13
Upper bound[b]	0.25
Standard	0.033

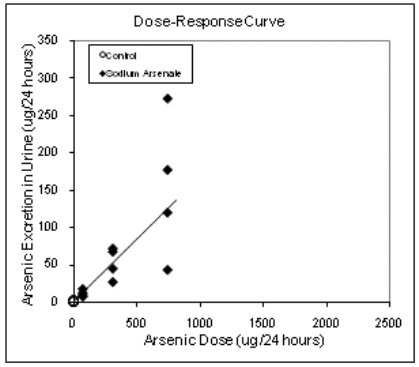
ABA and Uncertainty

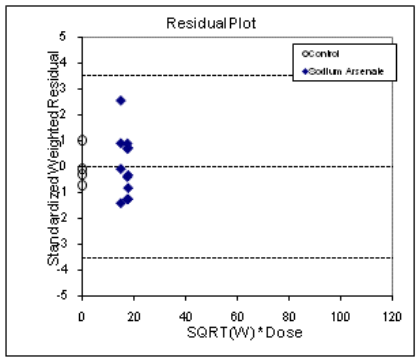
	Oral/IV
RBA	0.35
Lower bound[b]	0.24
Upper bound[b]	0.58
Standard Error[b]	0.089**

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.
** g ≥ 0.05, estimate is uncertain

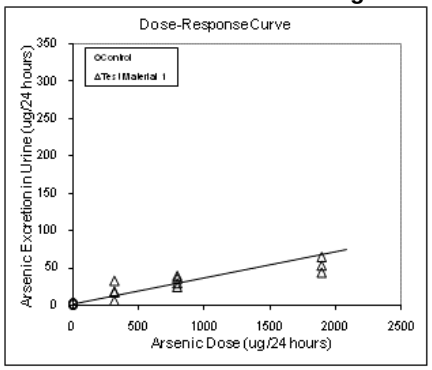
Figure 9c - All Data
Phase II Pilot 1 (Experiment 10)
Day 14

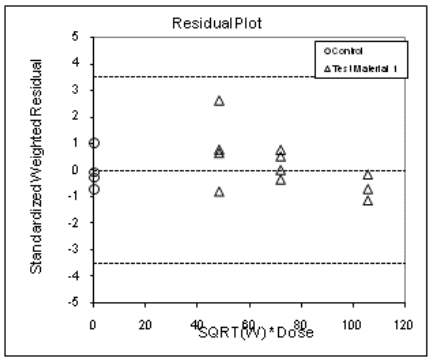
Reference Material
Sodium Arsenate



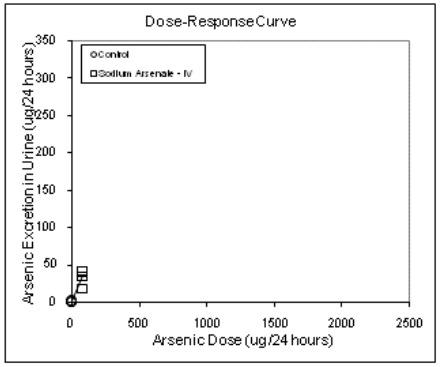


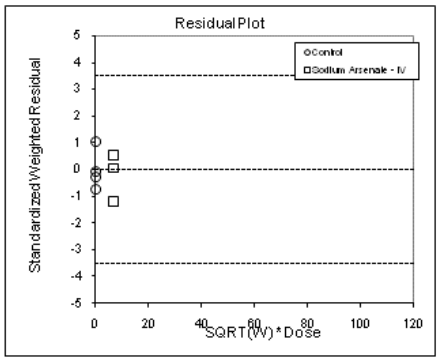
Test Material 1
California Gulch AV Slag



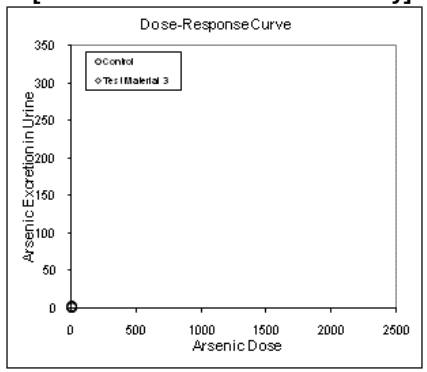


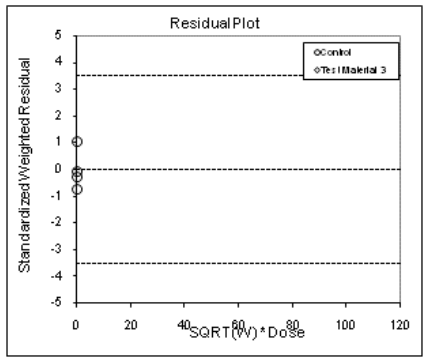
Sodium Arsenate – IV





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.5	0.4
b1	0.17	0.02
b2	0.04	0.00
b3	0.42	0.09
b4	–	–
Covariance (b1,b2)	0.0088	–
Covariance (b1,b3)	0.0052	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	198.71	3	66.24
Error	41.51	27	1.54
Total	240.22	30	8.01

Statistic	Estimate
F	43.086
p	< 0.001
Adjusted R^2	0.8080

RBA and Uncertainty

	Test Material 1
RBA	0.21
Lower bound[b]	0.15
Upper bound[b]	0.29
Standard	0.040

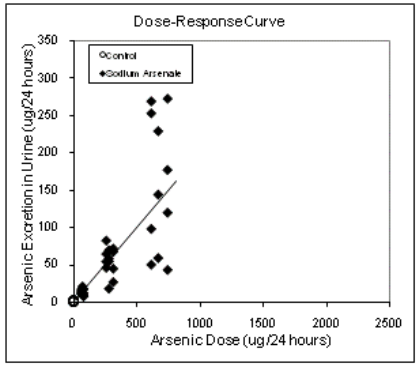
ABA and Uncertainty

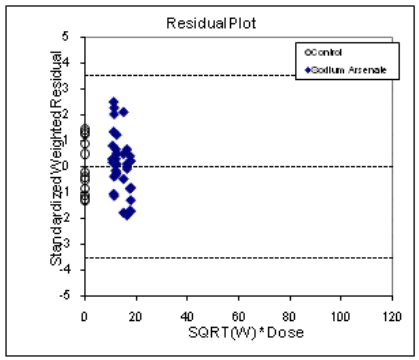
	Oral/IV
RBA	0.40
Lower bound[b]	0.26
Upper bound[b]	0.66
Standard Error[b]	0.101**

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.
** g ≥ 0.05, estimate is uncertain

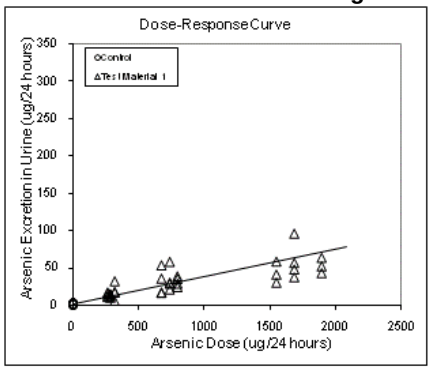
Figure 9d - All Data
Phase II Pilot 1 (Experiment 10)
All Days (Day 8, 11, 14)

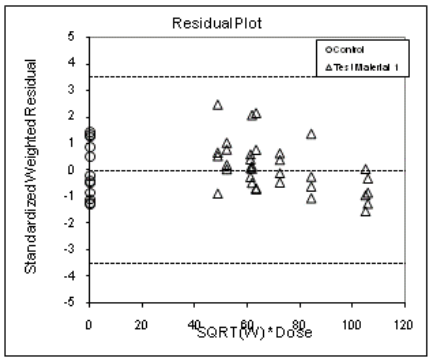
Reference Material
Sodium Arsenate



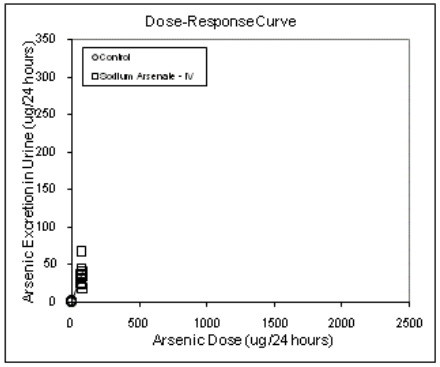


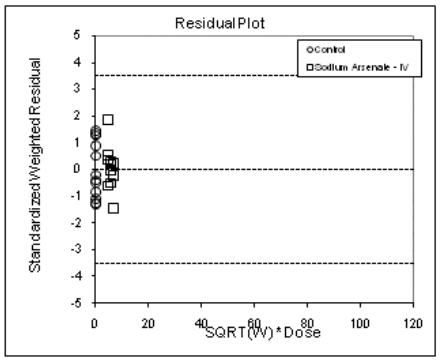
Test Material 1
California Gulch AV Slag



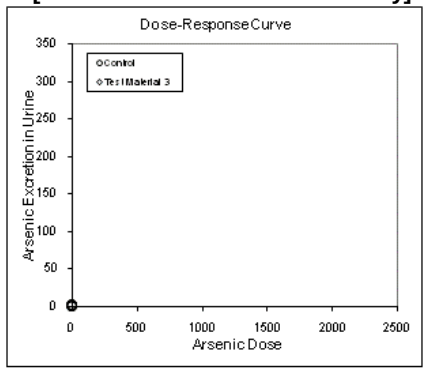


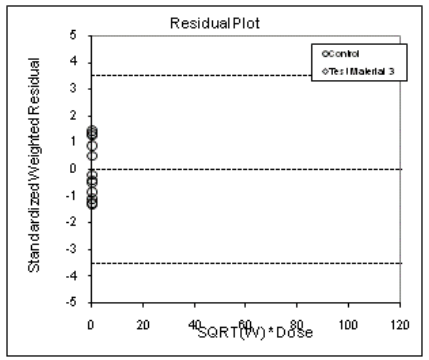
Sodium Arsenate – IV





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	1.6	0.2
b1	0.20	0.01
b2	0.04	0.00
b3	0.48	0.06
b4	–	–
Covariance (b1,b2)	0.0095	–
Covariance (b1,b3)	0.0047	–
Covariance (b1,b4)	–	–
Degrees of Freedom	91	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	597.29	3	199.10
Error	135.07	90	1.50
Total	732.36	93	7.87

Statistic	Estimate
F	132.668
p	< 0.001
Adjusted R^2	0.8094

RBA and Uncertainty

	Test Material 1
RBA	0.18
Lower bound[b]	0.15
Upper bound[b]	0.22
Standard	0.020

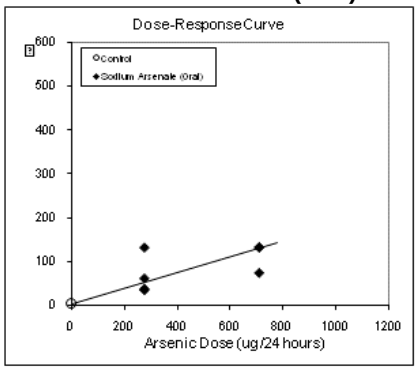
ABA and Uncertainty

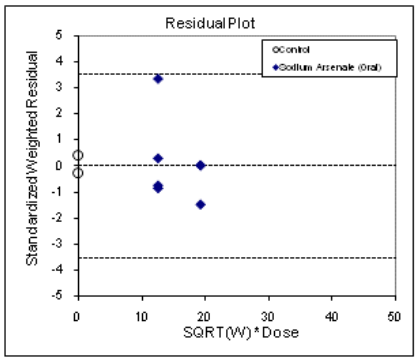
	Oral/IV
RBA	0.41
Lower bound[b]	0.33
Upper bound[b]	0.54
Standard Error[b]	0.061

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

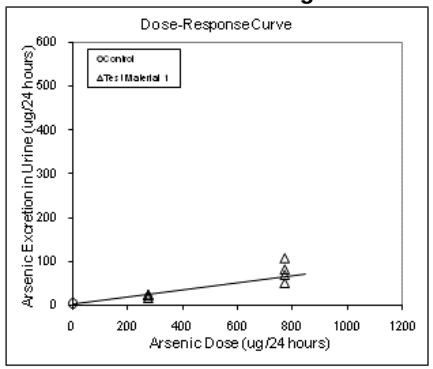
Figure 10a - All Data
Phase II Pilot 2 (Experiment 15)
Day 8

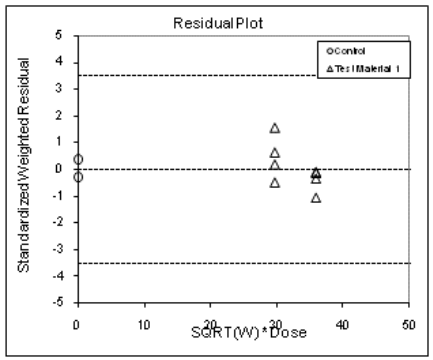
Reference Material
Sodium Arsenate (Oral)



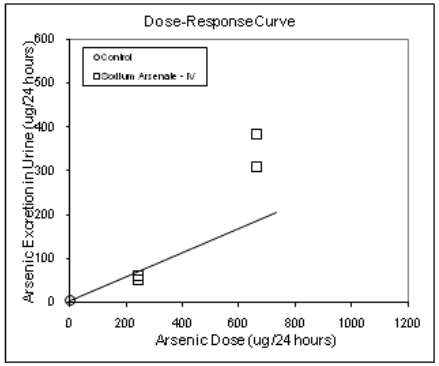


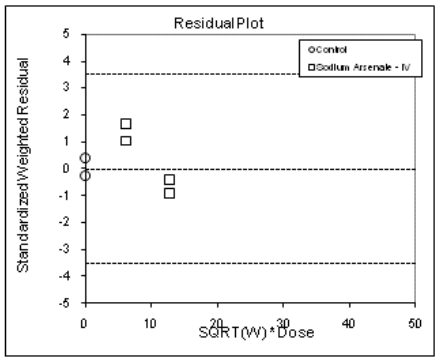
Test Material 1
Clark Fork Tailings



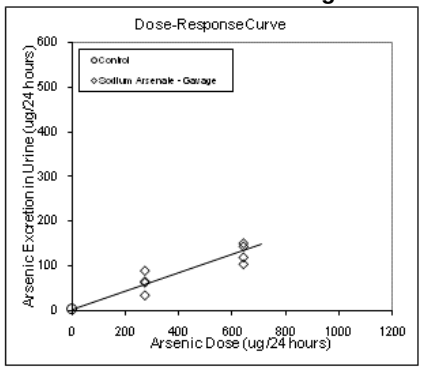


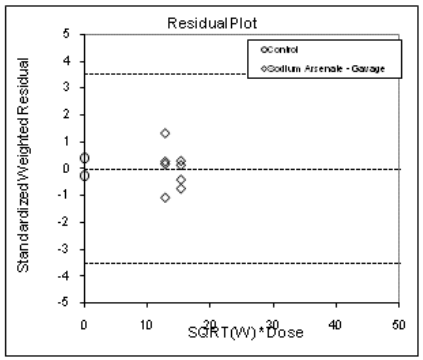
Sodium Arseante - IV





Sodium Arsenate – Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	3.4	1.1
b1	0.18	0.03
b2	0.08	0.01
b3	0.27	0.06
b4	0.21	0.03
Covariance (b1,b2)	0.0186	–
Covariance (b1,b3)	0.0056	–
Covariance (b1,b4)	0.0074	–
Degrees of Freedom	25	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	199.66	4	49.92
Error	32.53	24	1.36
Total	232.19	28	8.29

Statistic	Estimate
F	36.829
p	< 0.001
Adjusted R^2	0.8366

RBA and Uncertainty

	Test Material 1
RBA	0.44
Lower bound[b]	0.30
Upper bound[b]	0.65
Standard	0.098**

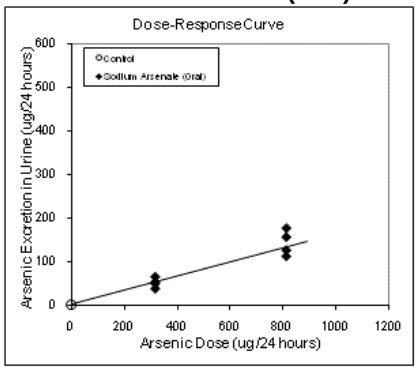
ABA and Uncertainty

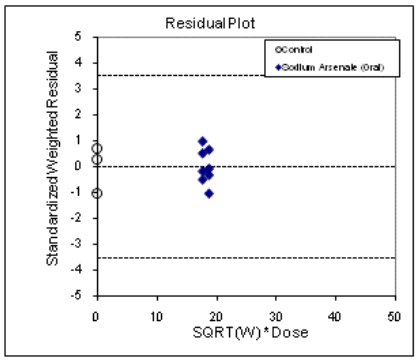
	Oral/IV
RBA	0.75
Lower bound[b]	0.50
Upper bound[b]	1.23
Standard Error[b]	0.191**

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.
** $g \geq 0.05$, estimate is uncertain

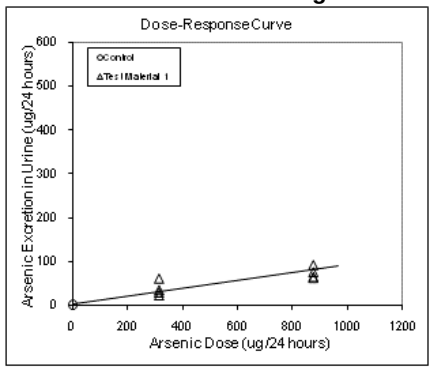
Figure 10b - All Data
Phase II Pilot 2 (Experiment 15)
Day 11

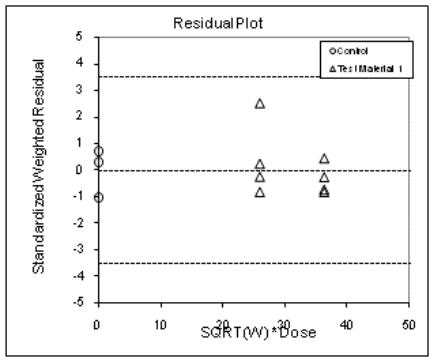
Reference Material
Sodium Arsenate (Oral)



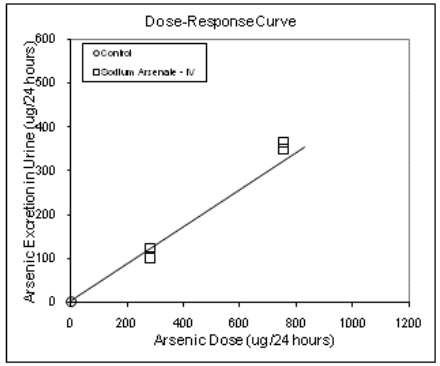


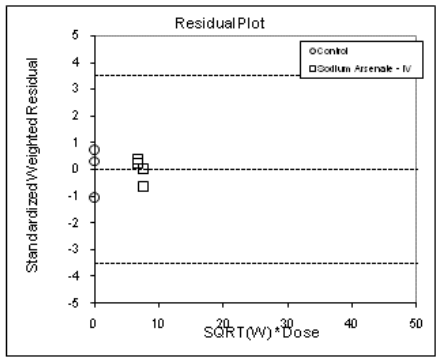
Test Material 1
Clark Fork Tailings



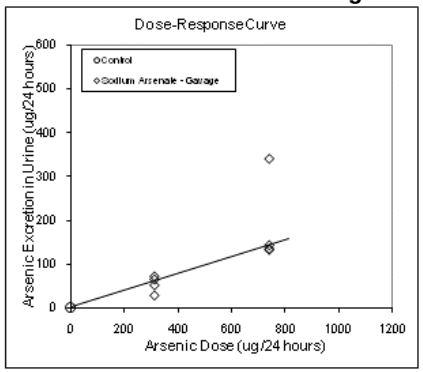


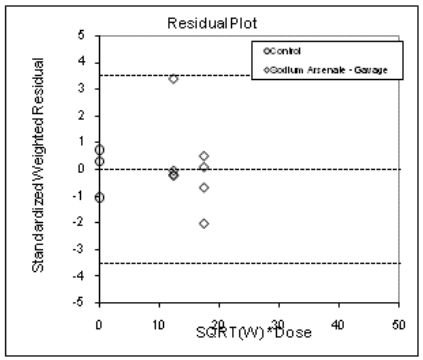
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.3	0.5
b1	0.16	0.02
b2	0.09	0.01
b3	0.43	0.07
b4	0.19	0.02
Covariance (b1,b2)	0.0046	–
Covariance (b1,b3)	0.0011	–
Covariance (b1,b4)	0.0031	–
Degrees of Freedom	27	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	234.89	4	58.72
Error	28.00	26	1.08
Total	262.89	30	8.76

Statistic	Estimate
F	54.538
p	< 0.001
Adjusted R^2	0.8771

RBA and Uncertainty

	Test Material 1
RBA	0.55
Lower bound[b]	0.40
Upper bound[b]	0.76
Standard	0.100

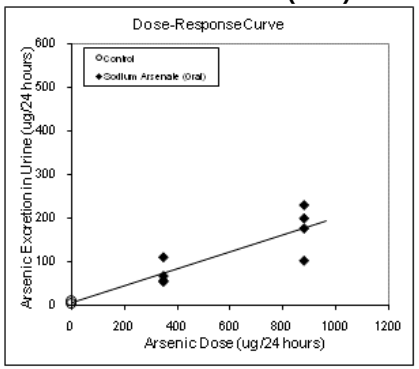
ABA and Uncertainty

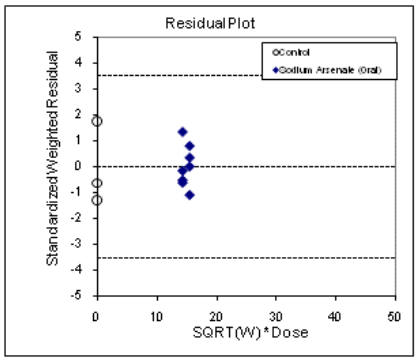
	Oral/IV
RBA	0.45
Lower bound[b]	0.32
Upper bound[b]	0.67
Standard Error[b]	0.095**

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.
** $g \geq 0.05$, estimate is uncertain

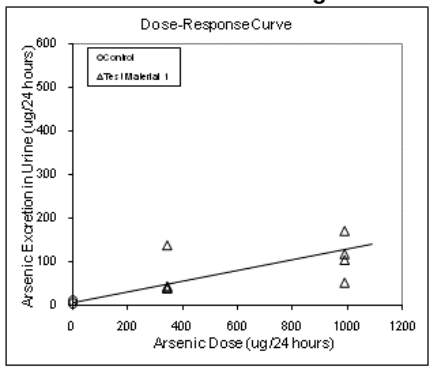
Figure 10c - All Data
Phase II Pilot 2 (Experiment 15)
Day 14

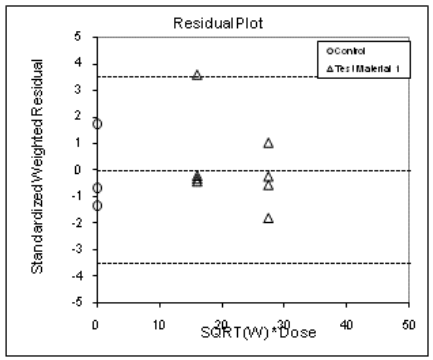
Reference Material
Sodium Arsenate (Oral)



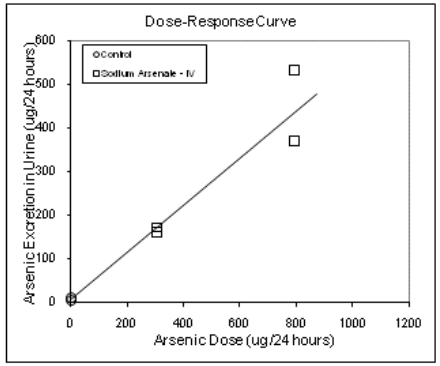


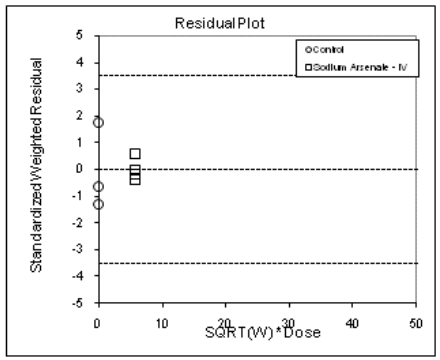
Test Material 1
Clark Fork Tailings



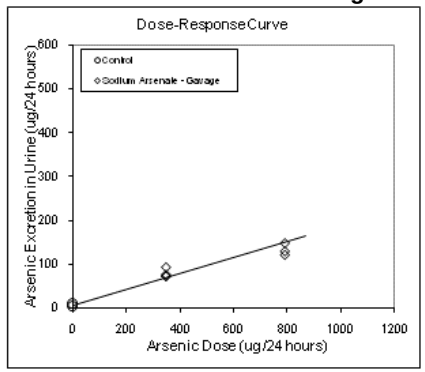


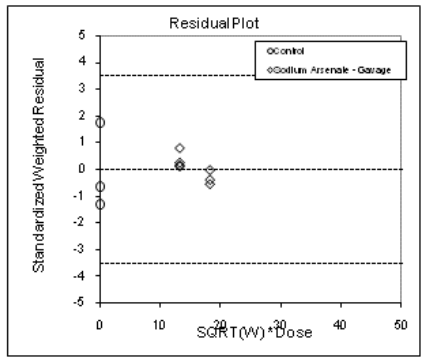
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	5.4	1.4
b1	0.20	0.03
b2	0.12	0.02
b3	0.54	0.11
b4	0.18	0.03
Covariance (b1,b2)	0.0093	–
Covariance (b1,b3)	0.0026	–
Covariance (b1,b4)	0.0078	–
Degrees of Freedom	26	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	218.52	4	54.63
Error	40.31	25	1.61
Total	258.83	29	8.93

Statistic	Estimate
F	33.879
p	< 0.001
Adjusted R^2	0.8193

RBA and Uncertainty

	Test Material 1
RBA	0.63
Lower bound[b]	0.42
Upper bound[b]	0.93
Standard	0.141**

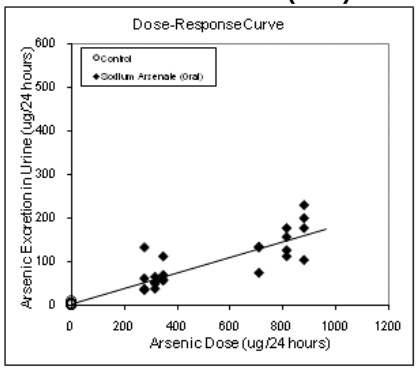
ABA and Uncertainty

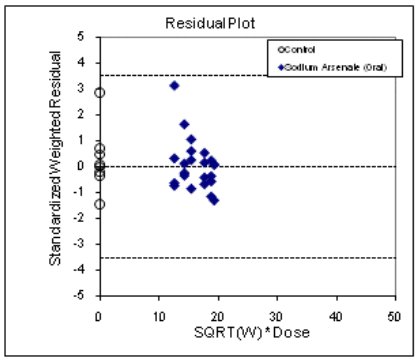
	Oral/IV
RBA	0.34
Lower bound[b]	0.22
Upper bound[b]	0.56
Standard Error[b]	0.090**

[b]Uncertainty bounds and standard error were calculated using Fieller's theorem.
** g ≥ 0.05, estimate is uncertain

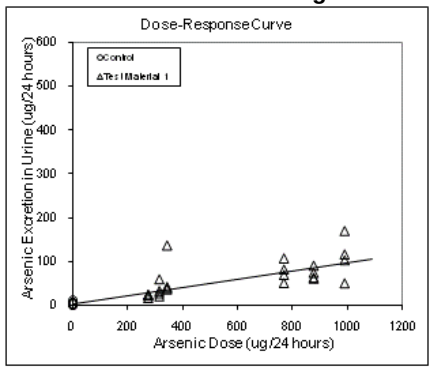
Figure 10d - All Data
Phase II Pilot 2 (Experiment 15)
All Days (Day 8, 11, 14)

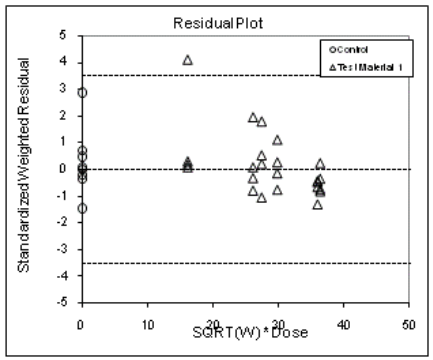
Reference Material
Sodium Arsenate (Oral)



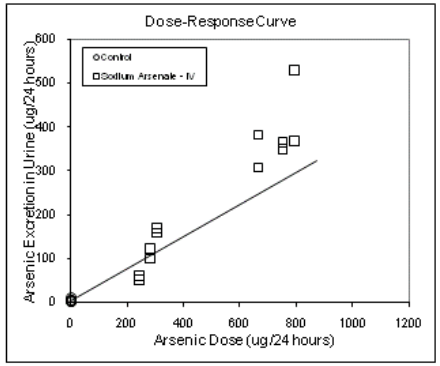


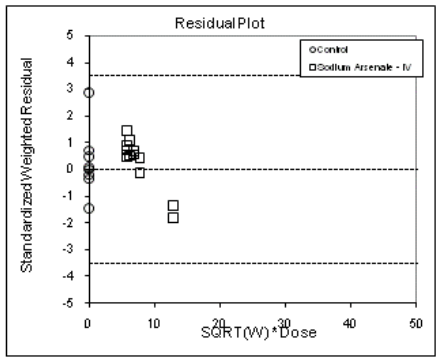
Test Material 1
Clark Fork Tailings



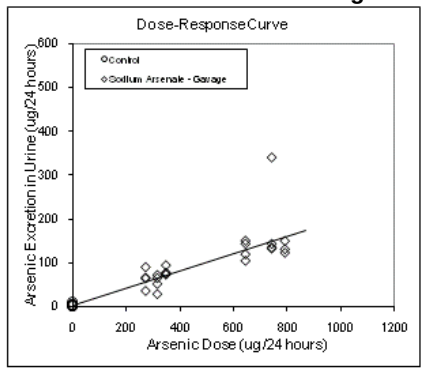


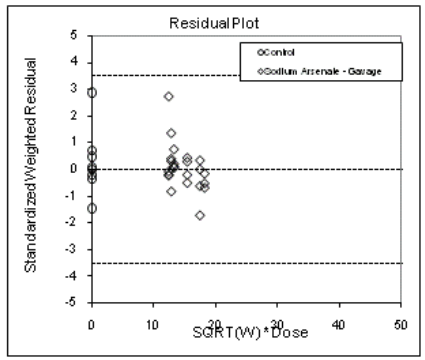
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.9	0.5
b1	0.18	0.02
b2	0.09	0.01
b3	0.37	0.04
b4	0.20	0.02
Covariance (b1,b2)	0.0083	–
Covariance (b1,b3)	0.0023	–
Covariance (b1,b4)	0.0045	–
Degrees of Freedom	86	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	652.21	4	163.05
Error	124.20	85	1.46
Total	776.40	89	8.72

Statistic	Estimate
F	111.593
p	< 0.001
Adjusted R^2	0.8325

RBA and Uncertainty

	Test Material 1
RBA	0.52
Lower bound[b]	0.42
Upper bound[b]	0.64
Standard	0.066

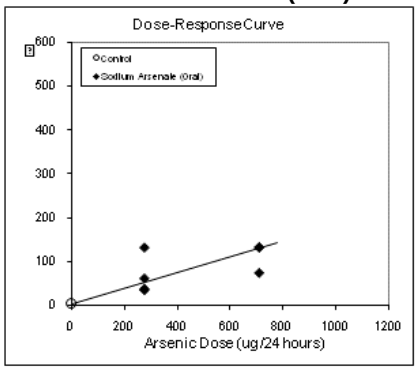
ABA and Uncertainty

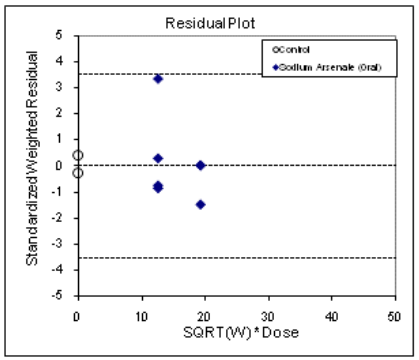
	Oral/IV
RBA	0.53
Lower bound[b]	0.42
Upper bound[b]	0.69
Standard Error[b]	0.080

[b]Uncertainty bounds and standard error were calculated using Fieller's theorem.

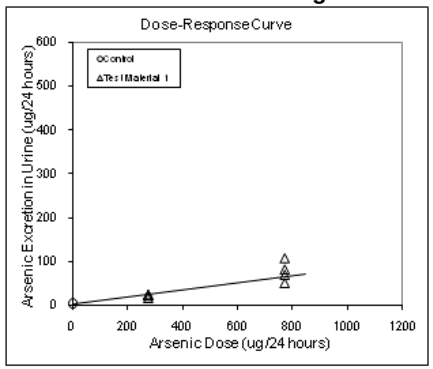
Figure 10a - Outliers Excluded
Phase II Pilot 2 (Experiment 15)
Day 8

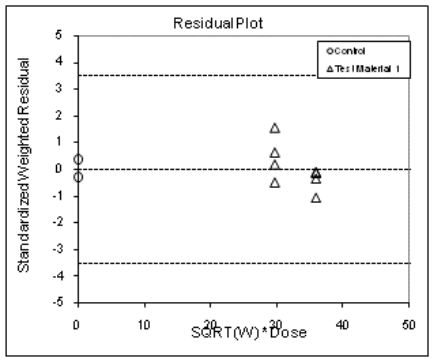
Reference Material
Sodium Arsenate (Oral)



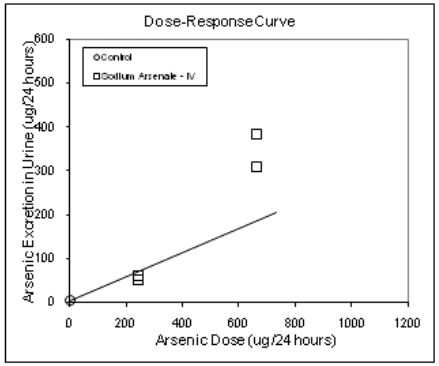


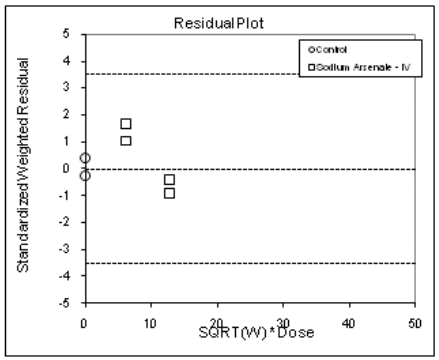
Test Material 1
Clark Fork Tailings



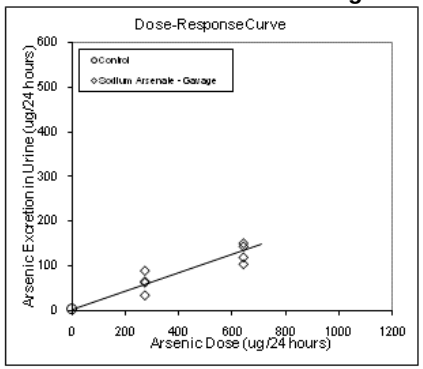


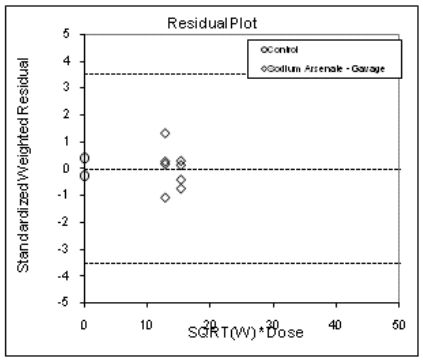
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	3.4	1.1
b1	0.18	0.03
b2	0.08	0.01
b3	0.27	0.06
b4	0.21	0.03
Covariance (b1,b2)	0.0186	–
Covariance (b1,b3)	0.0056	–
Covariance (b1,b4)	0.0074	–
Degrees of Freedom	25	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	199.66	4	49.92
Error	32.53	24	1.36
Total	232.19	28	8.29

Statistic	Estimate
F	36.829
p	< 0.001
Adjusted R^2	0.8366

RBA and Uncertainty

	Test Matrl. 1
RBA	0.44
Lower bound[b]	0.30
Upper bound[b]	0.65
Standard Err.[b]	0.098**

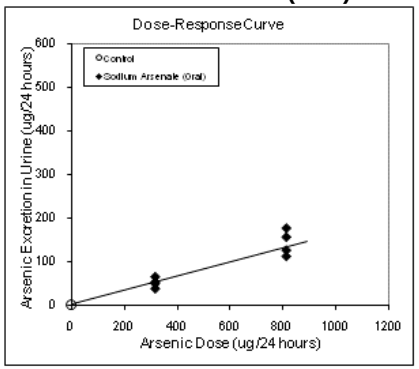
ABA and Uncertainty

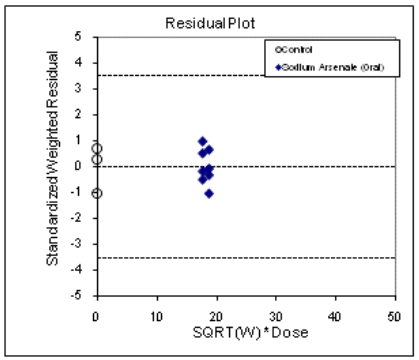
	Oral/IV	Gavage/IV
RBA	0.66	0.75
Lower bound[b]	0.42	0.50
Upper bound[b]	1.08	1.23
Standard Err.[b]	0.172**	0.191**

[b] Uncertainty bounds and standard error were calculated using Fieller's
** g ≥ 0.05, estimate is uncertain

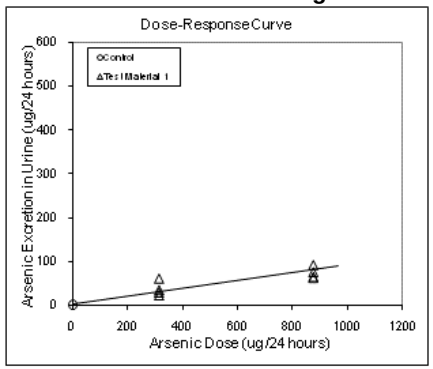
Figure 10b - Outliers Excluded
Phase II Pilot 2 (Experiment 15)
Day 11

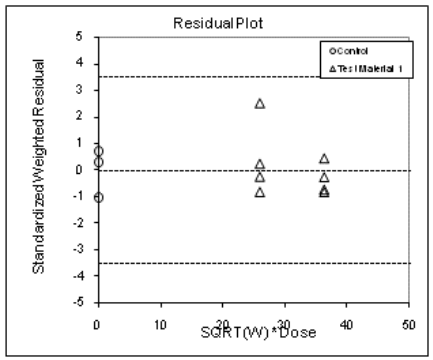
Reference Material
Sodium Arsenate (Oral)



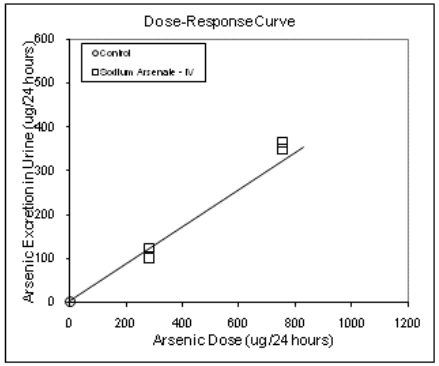


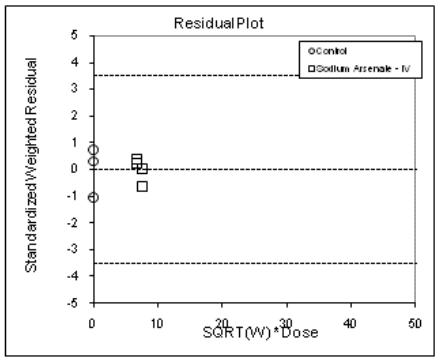
Test Material 1
Clark Fork Tailings



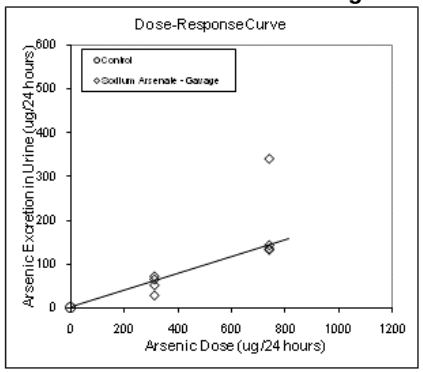


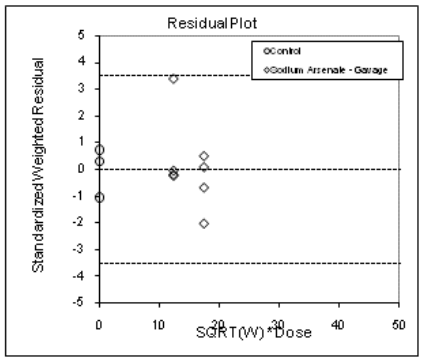
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.3	0.5
b1	0.16	0.02
b2	0.09	0.01
b3	0.43	0.07
b4	0.19	0.02
Covariance (b1,b2)	0.0046	–
Covariance (b1,b3)	0.0011	–
Covariance (b1,b4)	0.0031	–
Degrees of Freedom	27	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	234.89	4	58.72
Error	28.00	26	1.08
Total	262.89	30	8.76

Statistic	Estimate
F	54.538
p	< 0.001
Adjusted R^2	0.8771

RBA and Uncertainty

	Test Matrl. 1
RBA	0.55
Lower bound[b]	0.40
Upper bound[b]	0.76
Standard Err.[b]	0.100

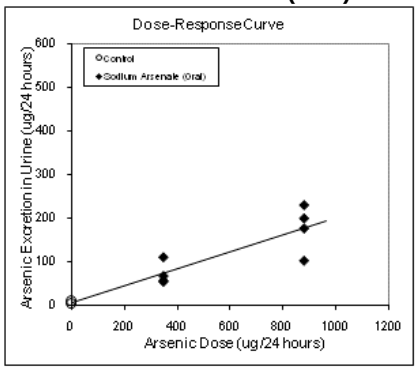
ABA and Uncertainty

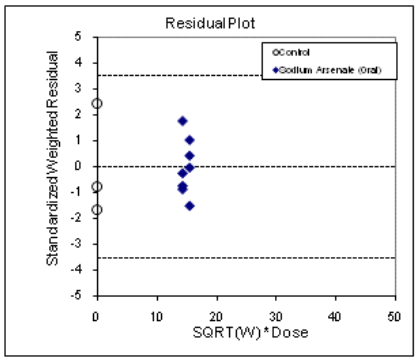
	Oral/IV	Gavage/IV
RBA	0.38	0.45
Lower bound[b]	0.27	0.32
Upper bound[b]	0.56	0.67
Standard Err.[b]	0.079**	0.095**

[b]Uncertainty bounds and standard error were calculated using Fieller's
** g ≥ 0.05, estimate is uncertain

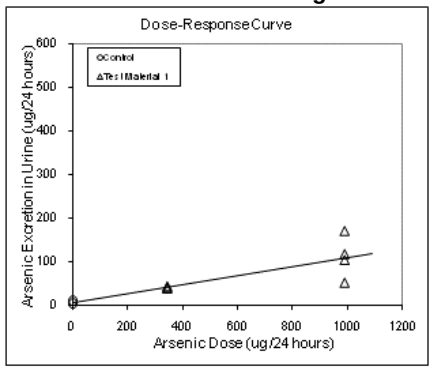
Figure 10c - Outliers Excluded
Phase II Pilot 2 (Experiment 15)
Day 14

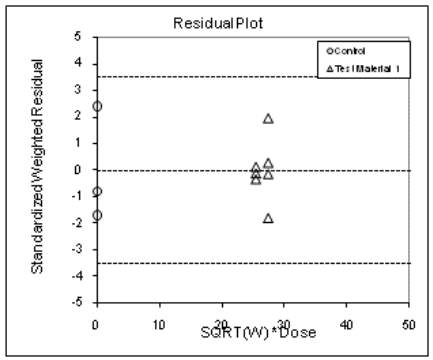
Reference Material
Sodium Arsenate (Oral)



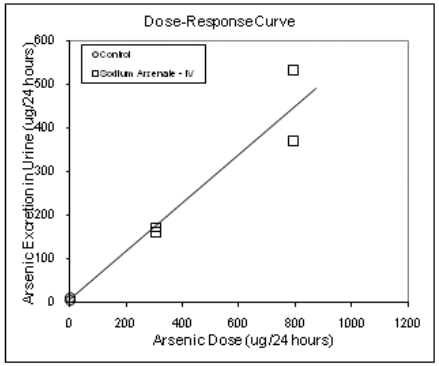


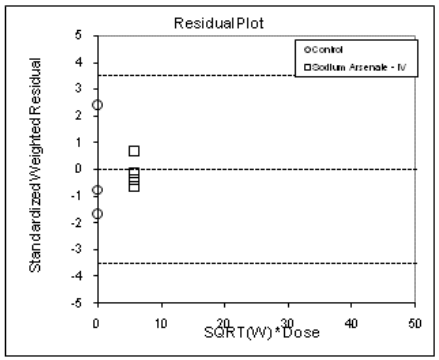
Test Material 1
Clark Fork Tailings



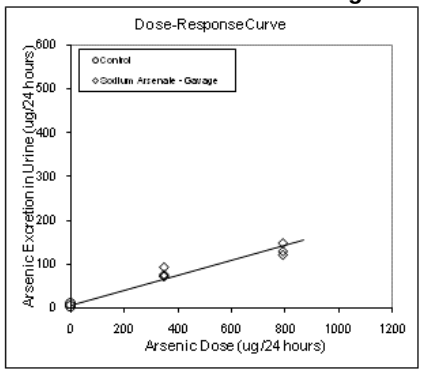


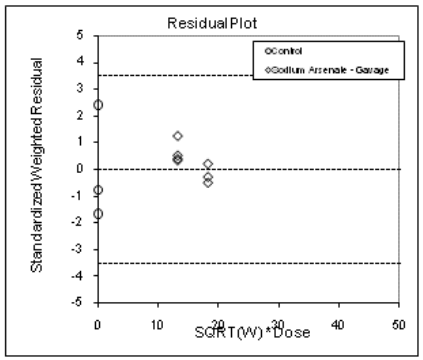
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	5.2	1.1
b1	0.20	0.02
b2	0.10	0.01
b3	0.56	0.08
b4	0.17	0.02
Covariance (b1,b2)	0.0120	–
Covariance (b1,b3)	0.0020	–
Covariance (b1,b4)	0.0079	–
Degrees of Freedom	25	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	206.24	4	51.56
Error	21.78	24	0.91
Total	228.02	28	8.14

Statistic	Estimate
F	56.813
p	< 0.001
Adjusted R^2	0.8886

RBA and Uncertainty

	Test Matrl. 1
RBA	0.53
Lower bound[b]	0.39
Upper bound[b]	0.72
Standard Err.[b]	0.094

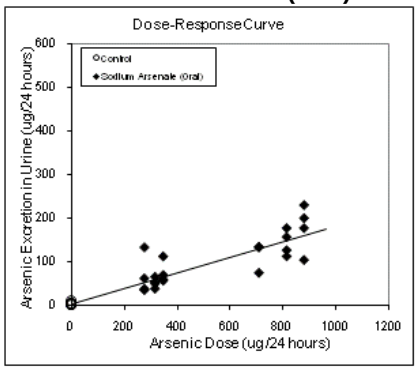
ABA and Uncertainty

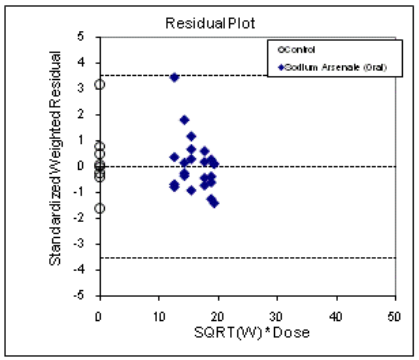
	Oral/IV	Gavage/IV
RBA	0.35	0.31
Lower bound[b]	0.26	0.23
Upper bound[b]	0.48	0.43
Standard Err.[b]	0.063**	0.054**

[b] Uncertainty bounds and standard error were calculated using Fieller's
** $g \geq 0.05$, estimate is uncertain

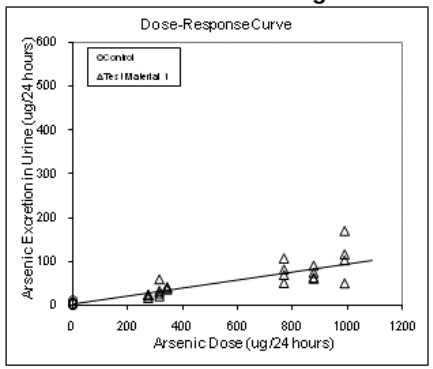
Figure 10d - Outliers Excluded
Phase II Pilot 2 (Experiment 15)
All Days (Day 8, 11, 14)

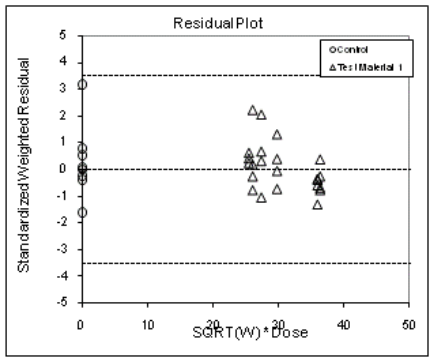
Reference Material
Sodium Arsenate (Oral)



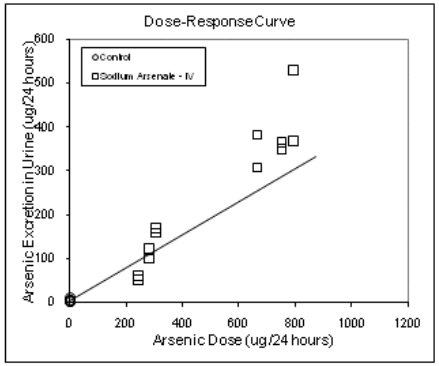


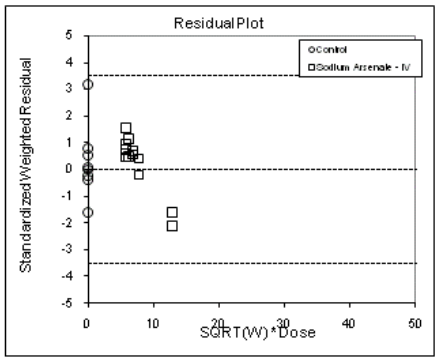
Test Material 1
Clark Fork Tailings



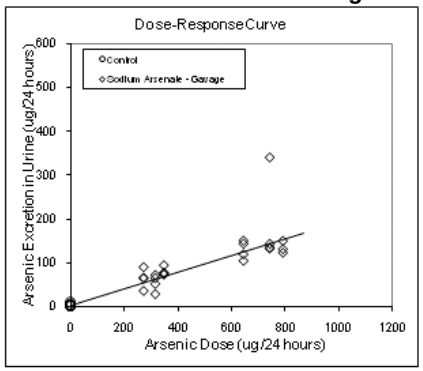


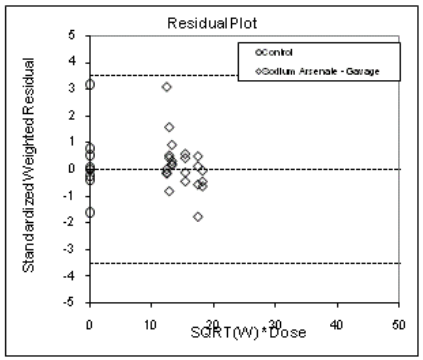
Sodium Arsenate - IV





Sodium Arsenate - Gavage





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.9	0.4
b1	0.18	0.01
b2	0.09	0.01
b3	0.38	0.04
b4	0.19	0.01
Covariance (b1,b2)	0.0086	–
Covariance (b1,b3)	0.0022	–
Covariance (b1,b4)	0.0045	–
Degrees of Freedom	85	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	642.78	4	160.70
Error	101.55	84	1.21
Total	744.33	88	8.46

Statistic	Estimate
F	132.924
p	< 0.001
Adjusted R^2	0.8571

RBA and Uncertainty

	Test Matrl. 1
RBA	0.51
Lower bound[b]	0.42
Upper bound[b]	0.62
Standard Err.[b]	0.059

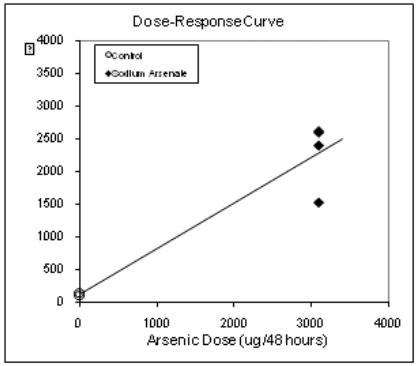
ABA and Uncertainty

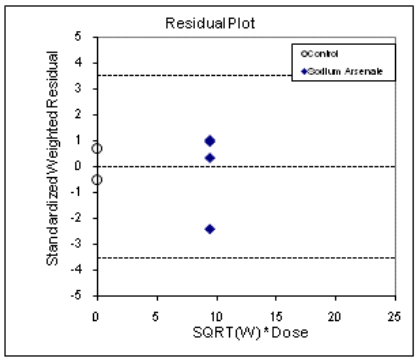
	Oral/IV	Gavage/IV
RBA	0.47	0.50
Lower bound[b]	0.38	0.41
Upper bound[b]	0.59	0.63
Standard Err.[b]	0.063	0.066

[b]Uncertainty bounds and standard error were calculated using Fieller's

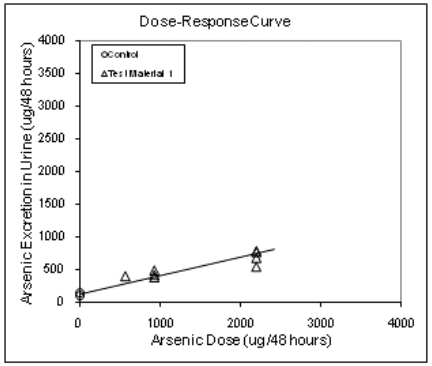
Figure 11a - All Data
Phase III Experiment 1
Days 6/7

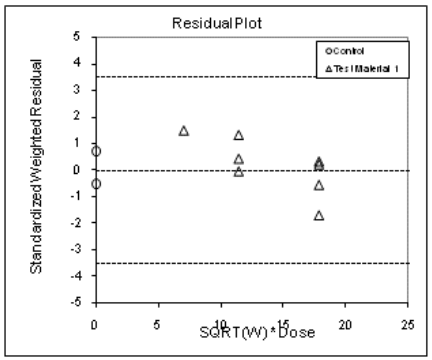
Reference Material
Sodium Arsenate



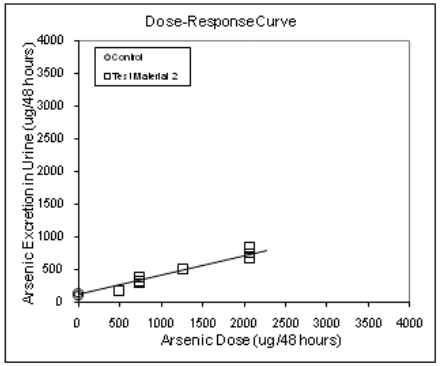


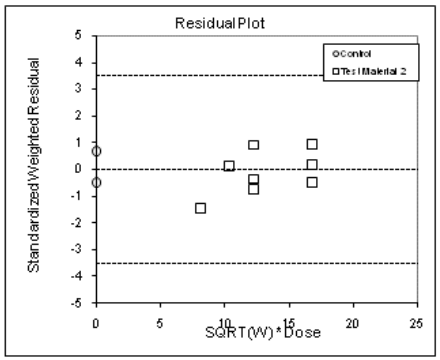
Test Material 1
VBI70 TM1



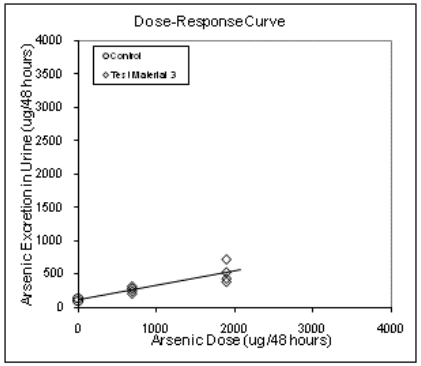


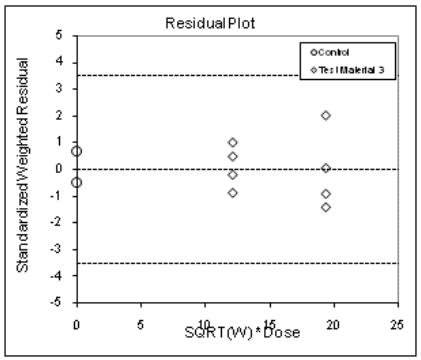
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	117.0	15.4
b1	0.70	0.06
b2	0.29	0.03
b3	0.30	0.03
b4	0.22	0.03
Covariance (b1,b2)	0.0318	–
Covariance (b1,b3)	0.0377	–
Covariance (b1,b4)	0.0414	–
Degrees of Freedom	27	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	382.25	4	95.56
Error	28.79	26	1.11
Total	411.04	30	13.70

Statistic	Estimate
F	86.300
p	< 0.001
Adjusted R^2	0.9192

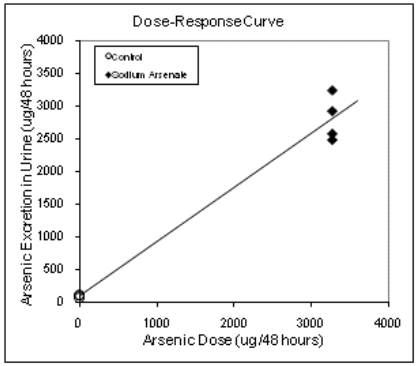
RBA and Uncertainty

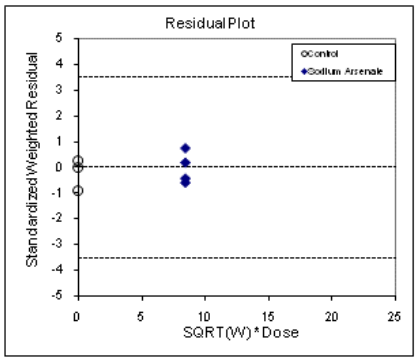
	Test Material 1	Test Material 2	Test Material 3
RBA	0.41	0.42	0.31
Lower bound[b]	0.33	0.33	0.24
Upper bound[b]	0.50	0.52	0.39
Standard Error[b]	0.050	0.054	0.044

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

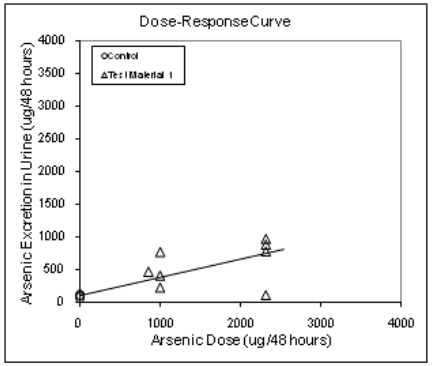
Figure 11b - All Data
Phase III Experiment 1
Days 8/9

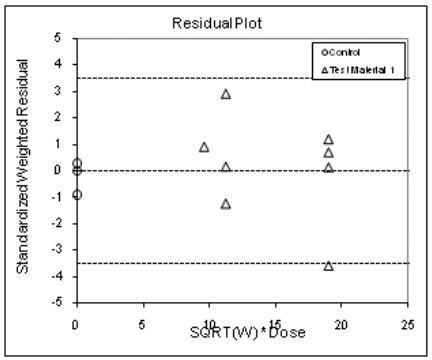
Reference Material
Sodium Arsenate



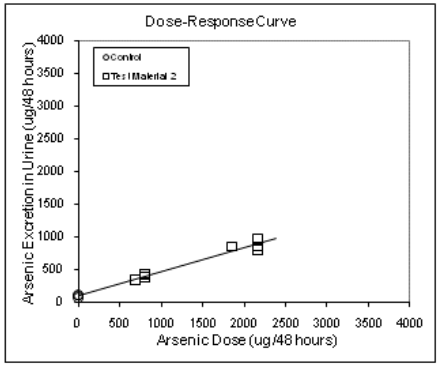


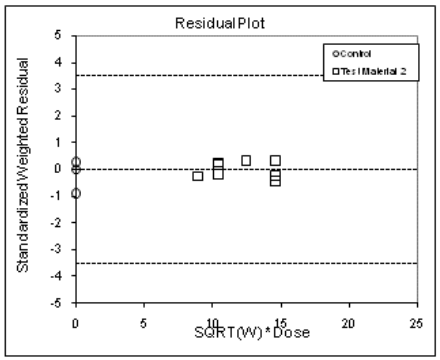
Test Material 1
VBI70 TM1



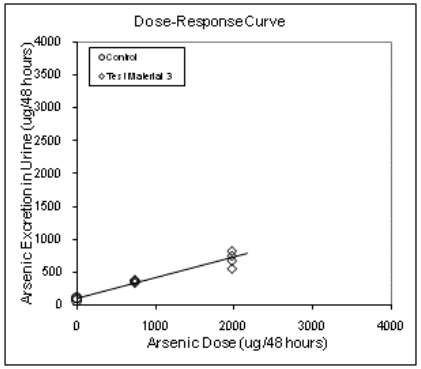


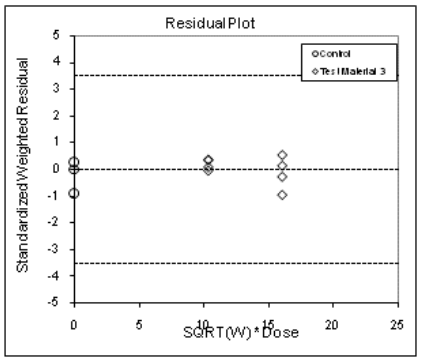
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	106.6	21.7
b1	0.83	0.09
b2	0.28	0.04
b3	0.37	0.05
b4	0.31	0.04
Covariance (b1,b2)	0.0230	–
Covariance (b1,b3)	0.0235	–
Covariance (b1,b4)	0.0258	–
Degrees of Freedom	27	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	496.94	4	124.24
Error	66.09	26	2.54
Total	563.04	30	18.77

Statistic	Estimate
F	48.872
p	< 0.001
Adjusted R^2	0.8646

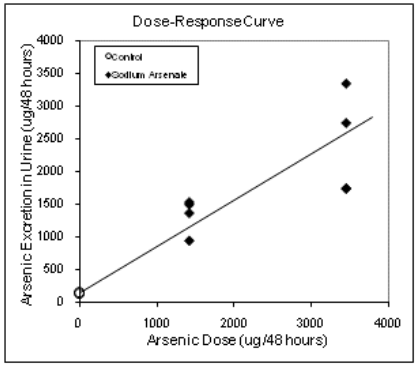
RBA and Uncertainty

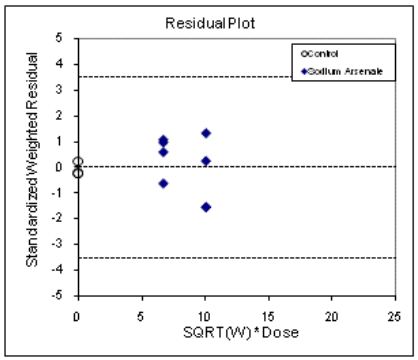
	Test Material 1	Test Material 2	Test Material 3
RBA	0.34	0.44	0.37
Lower bound[b]	0.25	0.32	0.27
Upper bound[b]	0.46	0.59	0.51
Standard Error[b]	0.060	0.077	0.068

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

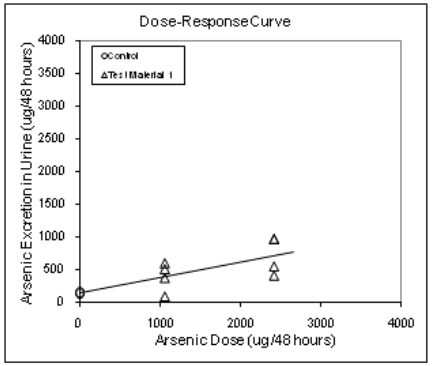
Figure 11c - All Data
Phase III Experiment 1
Days 10/11

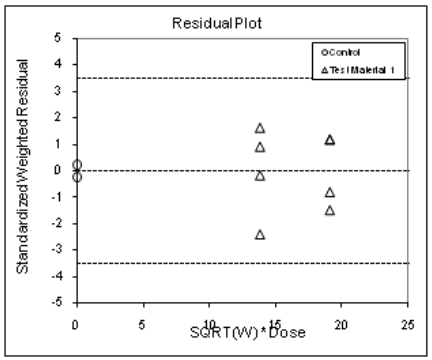
Reference Material
Sodium Arsenate



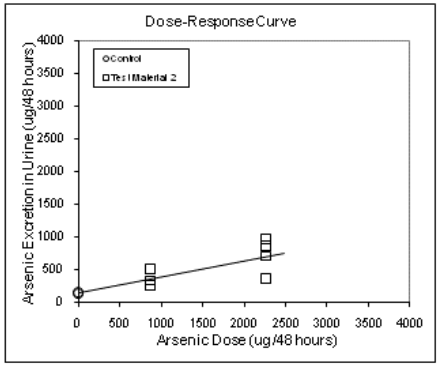


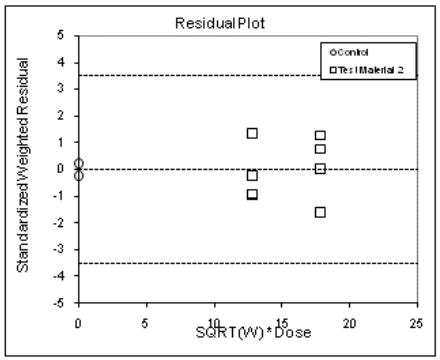
Test Material 1
VBI70 TM1



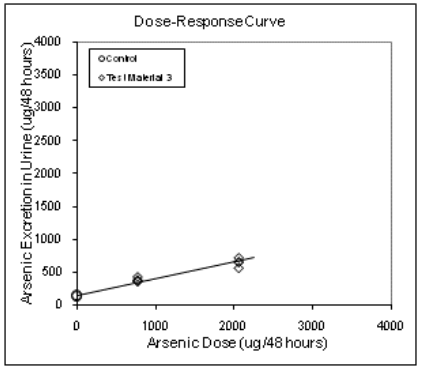


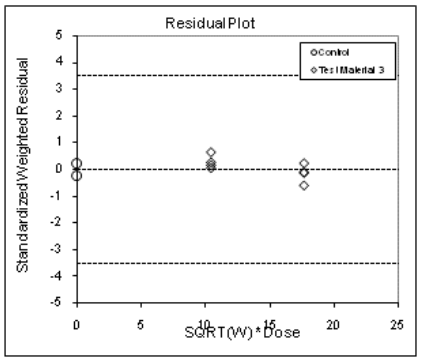
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	139.1	29.6
b1	0.71	0.07
b2	0.24	0.04
b3	0.24	0.04
b4	0.26	0.05
Covariance (b1,b2)	0.0723	–
Covariance (b1,b3)	0.0768	–
Covariance (b1,b4)	0.0730	–
Degrees of Freedom	31	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	452.58	4	113.14
Error	92.61	30	3.09
Total	545.19	34	16.03

Statistic	Estimate
F	36.652
p	< 0.001
Adjusted R^2	0.8075

RBA and Uncertainty

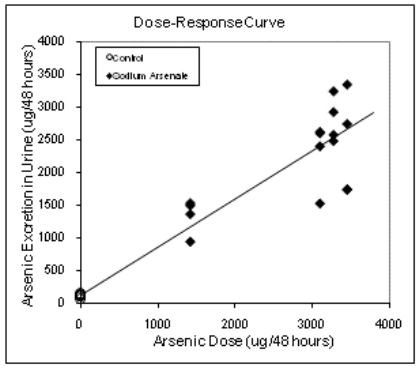
	Test Material 1	Test Material 2	Test Material 3
RBA	0.34	0.34	0.37
Lower bound[b]	0.23	0.23	0.25
Upper bound[b]	0.46	0.47	0.51
Standard Error[b]	0.065	0.070	0.074

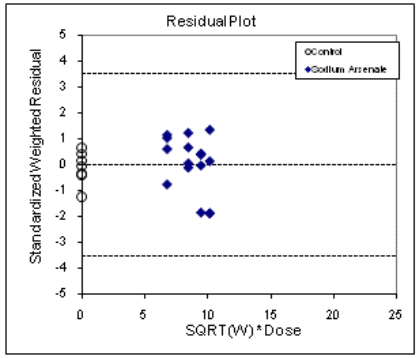
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 11d - All Data

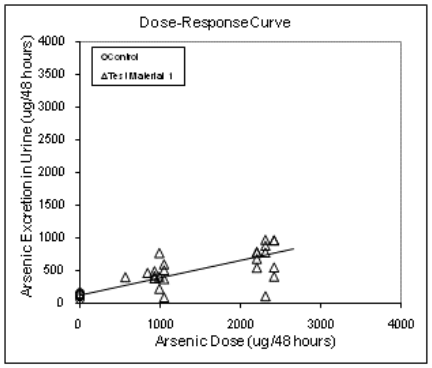
Phase III Experiment 1
All Days (Days 6/7, 8/9, 10/11)

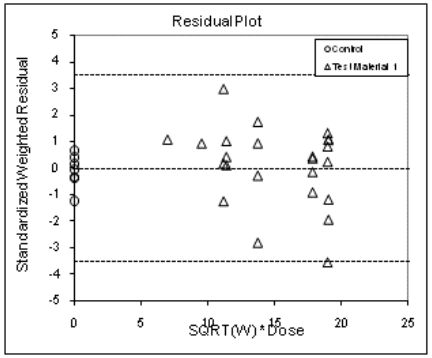
Reference Material
Sodium Arsenate



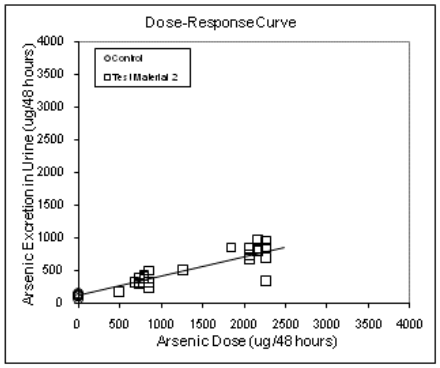


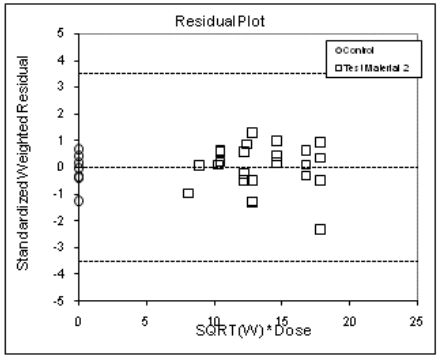
Test Material 1
VBI70 TM1



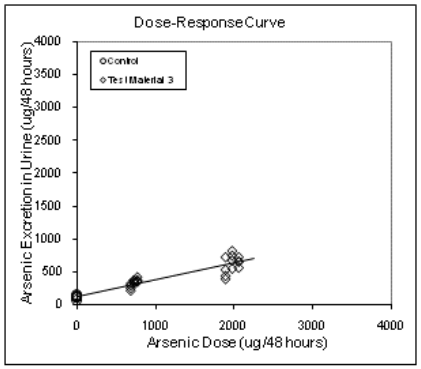


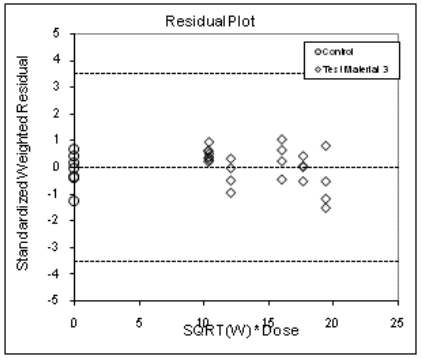
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	118.6	12.9
b1	0.74	0.04
b2	0.27	0.02
b3	0.30	0.02
b4	0.26	0.02
Covariance (b1,b2)	0.0401	–
Covariance (b1,b3)	0.0438	–
Covariance (b1,b4)	0.0459	–
Degrees of Freedom	93	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	1333.03	4	333.26
Error	207.65	92	2.26
Total	1540.68	96	16.05

Statistic	Estimate
F	147.652
p	< 0.001
Adjusted R^2	0.8594

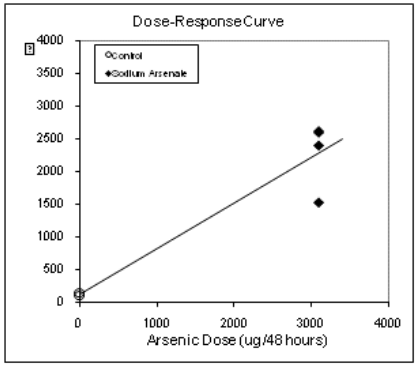
RBA and Uncertainty

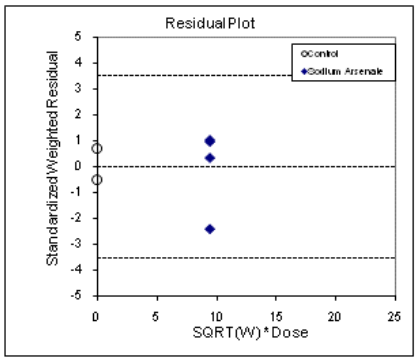
	Test Material 1	Test Material 2	Test Material 3
RBA	0.36	0.40	0.35
Lower bound[b]	0.31	0.34	0.29
Upper bound[b]	0.42	0.47	0.41
Standard Error[b]	0.035	0.039	0.036

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

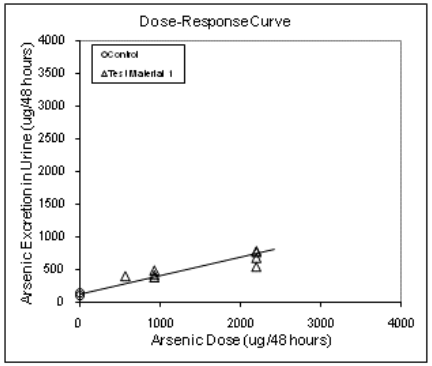
Figure 11a - Outliers Excluded
Phase III Experiment 1
Days 6/7

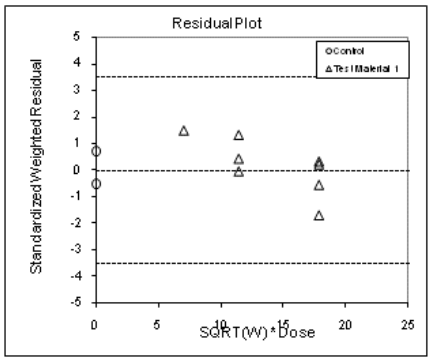
Reference Material
Sodium Arsenate



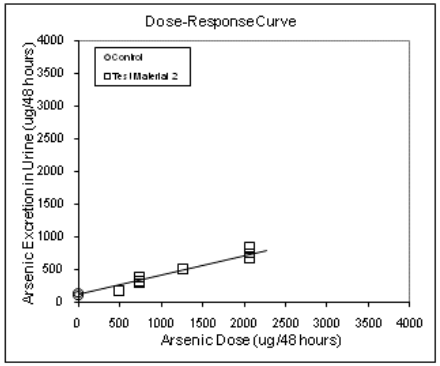


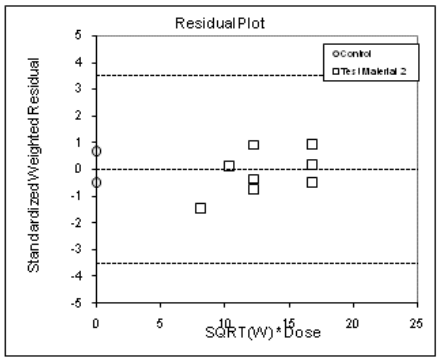
Test Material 1
VBI70 TM1



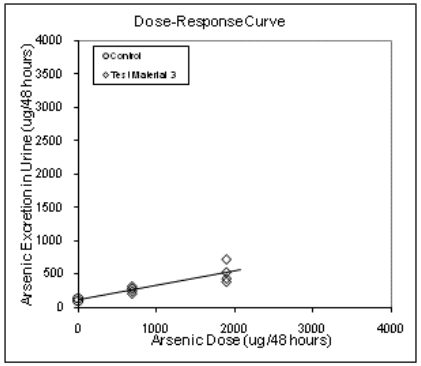


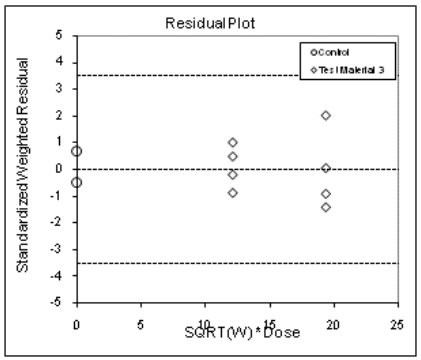
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	117.0	15.4
b1	0.70	0.06
b2	0.29	0.03
b3	0.30	0.03
b4	0.22	0.03
Covariance (b1,b2)	0.0318	–
Covariance (b1,b3)	0.0377	–
Covariance (b1,b4)	0.0414	–
Degrees of Freedom	27	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	382.25	4	95.56
Error	28.79	26	1.11
Total	411.04	30	13.70

Statistic	Estimate
F	86.300
p	< 0.001
Adjusted R^2	0.9192

RBA and Uncertainty

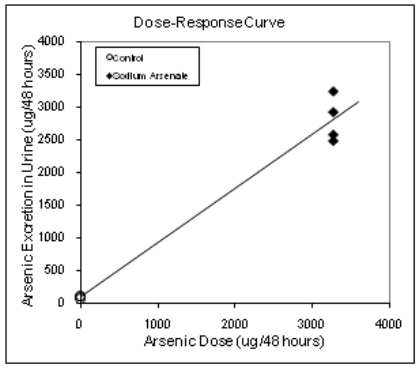
	Test Material 1	Test Material 2	Test Material 3
RBA	0.41	0.42	0.31
Lower bound[b]	0.33	0.33	0.24
Upper bound[b]	0.50	0.52	0.39
Standard Error[b]	0.050	0.054	0.044

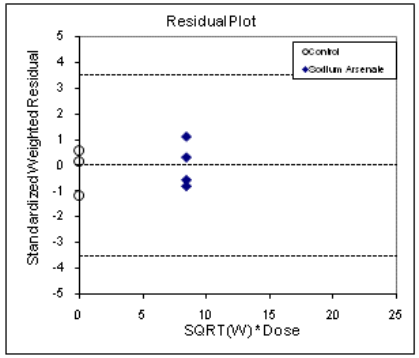
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 11b - Outliers Excluded

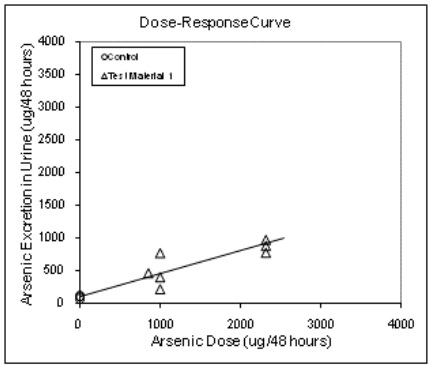
Phase III Experiment 1
Days 8/9

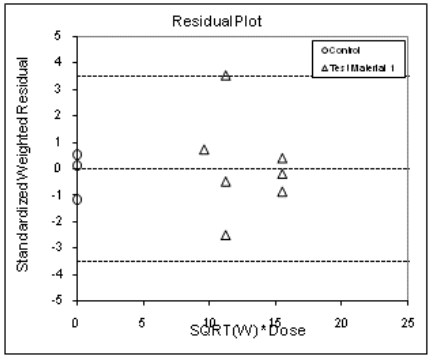
Reference Material
Sodium Arsenate



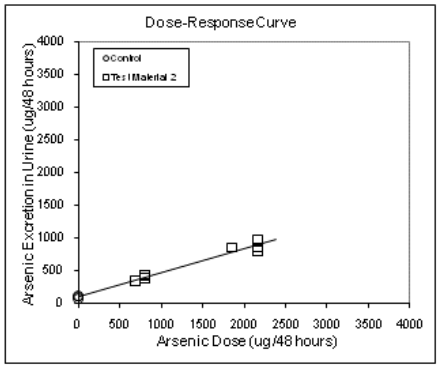


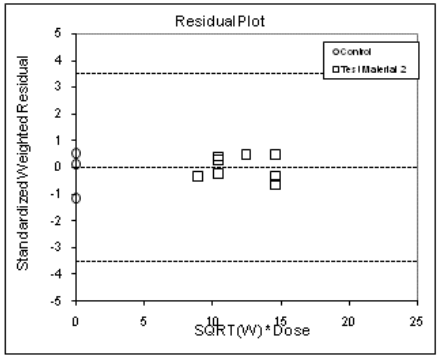
Test Material 1
VBI70 TM1



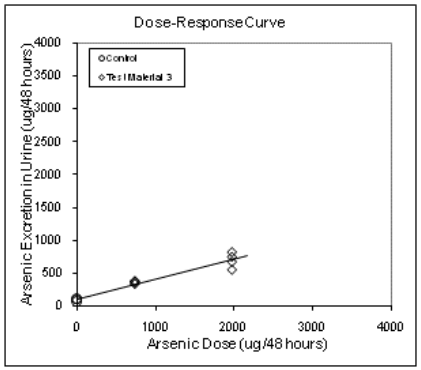


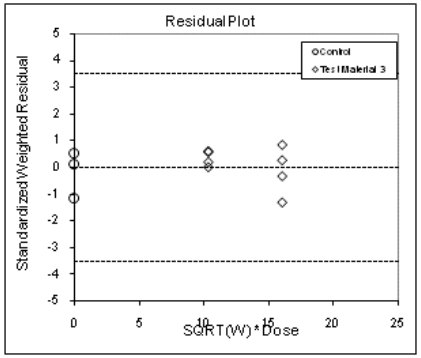
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	102.8	15.5
b1	0.83	0.07
b2	0.35	0.03
b3	0.37	0.03
b4	0.31	0.03
Covariance (b1,b2)	0.0219	–
Covariance (b1,b3)	0.0218	–
Covariance (b1,b4)	0.0250	–
Degrees of Freedom	26	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	499.08	4	124.77
Error	30.59	25	1.22
Total	529.67	29	18.26

Statistic	Estimate
F	101.986
p	< 0.001
Adjusted R^2	0.9330

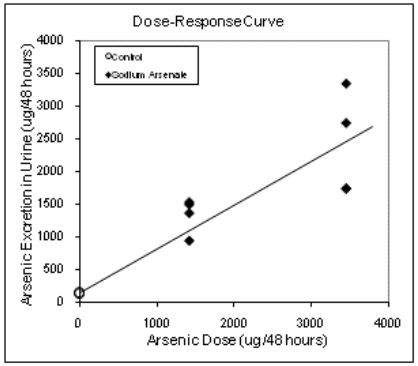
RBA and Uncertainty

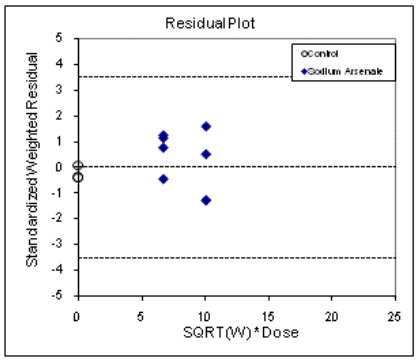
	Test Material 1	Test Material 2	Test Material 3
RBA	0.42	0.44	0.37
Lower bound[b]	0.34	0.36	0.30
Upper bound[b]	0.52	0.54	0.46
Standard Error[b]	0.051	0.053	0.045

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

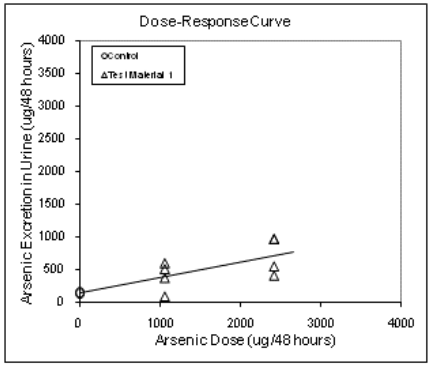
Figure 11c - Outliers Excluded
Phase III Experiment 1
Days 10/11

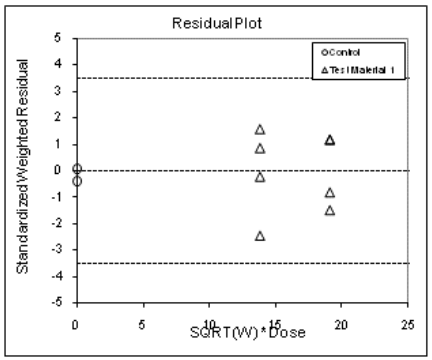
Reference Material
Sodium Arsenate



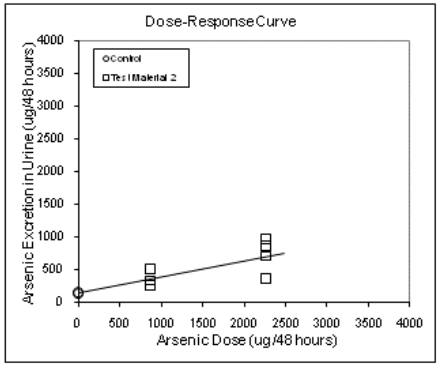


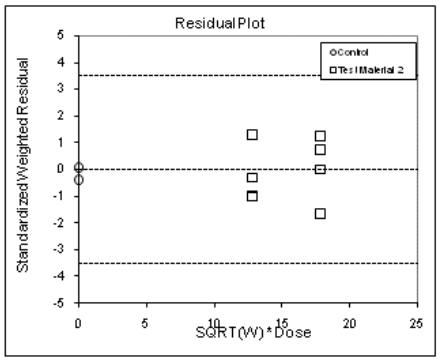
Test Material 1
VBI70 TM1



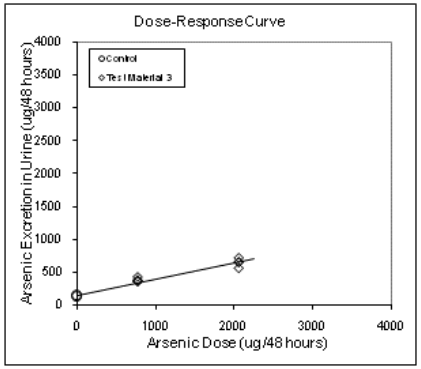


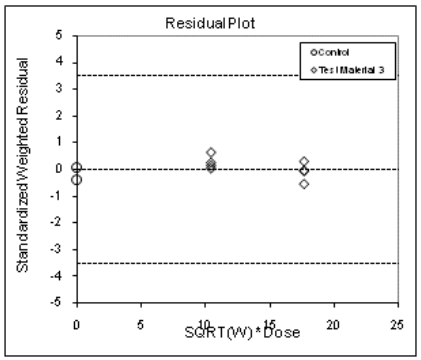
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	147.7	58.5
b1	0.67	0.06
b2	0.23	0.05
b3	0.24	0.05
b4	0.25	0.05
Covariance (b1,b2)	0.1971	–
Covariance (b1,b3)	0.1999	–
Covariance (b1,b4)	0.2113	–
Degrees of Freedom	31	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	415.09	4	103.77
Error	93.79	30	3.13
Total	508.87	34	14.97

Statistic	Estimate
F	33.194
p	< 0.001
Adjusted R^2	0.7911

RBA and Uncertainty

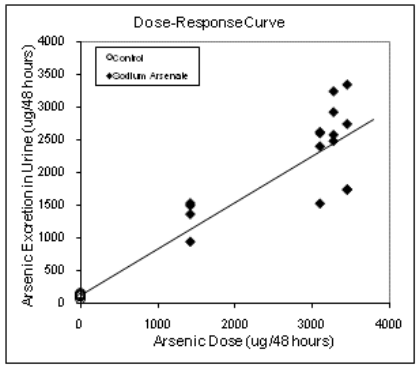
	Test Material 1	Test Material 2	Test Material 3
RBA	0.35	0.36	0.37
Lower bound[b]	0.22	0.23	0.25
Upper bound[b]	0.48	0.50	0.51
Standard Error[b]	0.076	0.080	0.076

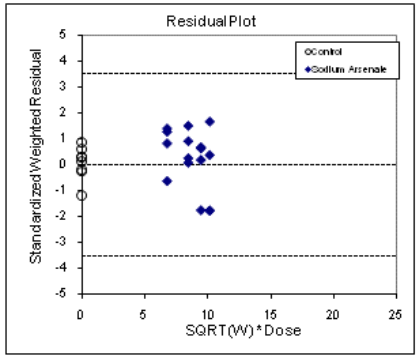
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 11d - Outliers Excluded

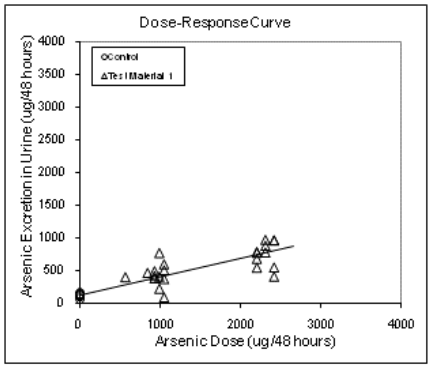
Phase III Experiment 1
All Days (Days 6/7, 8/9, 10/11)

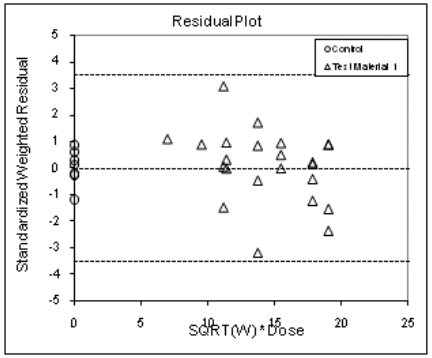
Reference Material
Sodium Arsenate



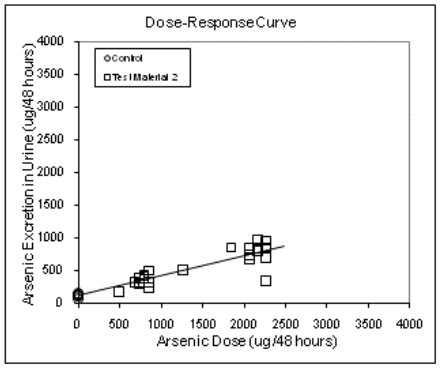


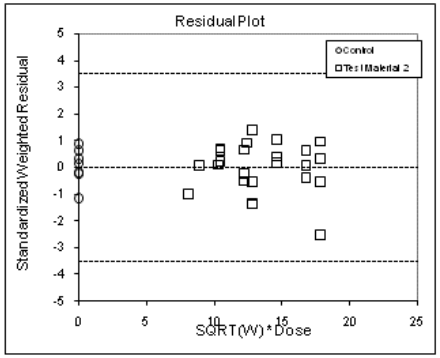
Test Material 1
VBI70 TM1



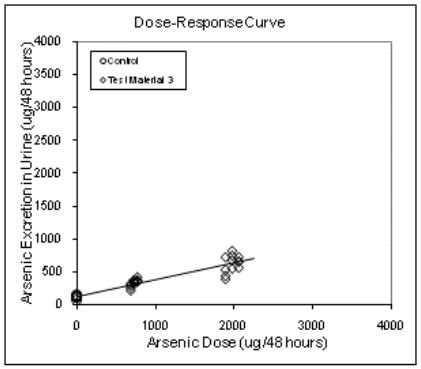


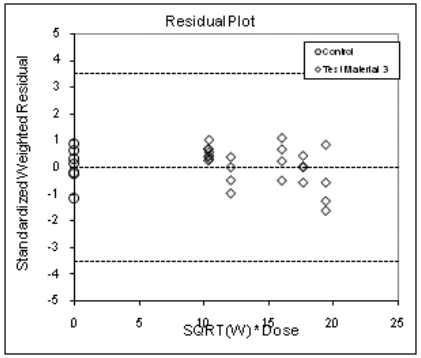
Test Material 2
VBI70 TM2





Test Material 3
VBI70 TM3





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	112.6	13.6
b1	0.71	0.04
b2	0.29	0.02
b3	0.30	0.02
b4	0.26	0.02
Covariance (b1,b2)	0.0466	–
Covariance (b1,b3)	0.0499	–
Covariance (b1,b4)	0.0551	–
Degrees of Freedom	92	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	1316.68	4	329.17
Error	178.95	91	1.97
Total	1495.64	95	15.74

Statistic	Estimate
F	167.387
p	< 0.001
Adjusted R^2	0.8751

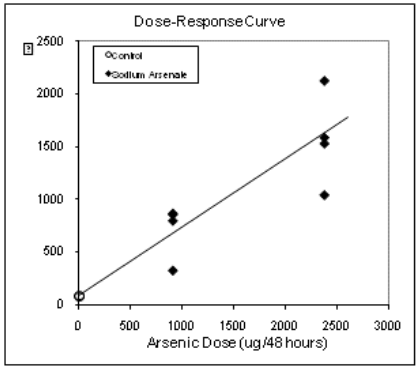
RBA and Uncertainty

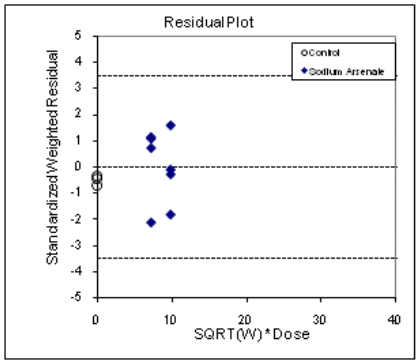
	Test Material 1	Test Material 2	Test Material 3
RBA	0.40	0.42	0.37
Lower bound[b]	0.35	0.36	0.31
Upper bound[b]	0.47	0.49	0.42
Standard Error[b]	0.036	0.038	0.033

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

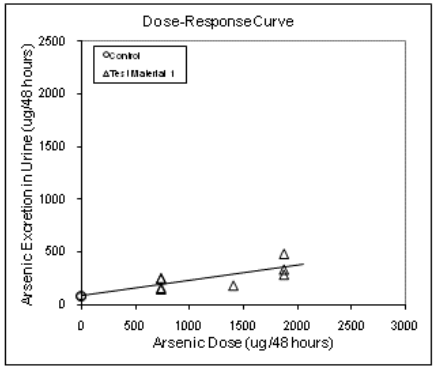
Figure 12a - All Data
Phase III Experiment 2
Days 6/7

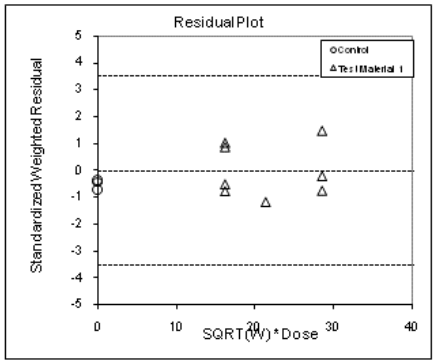
Reference Material
Sodium Arsenate



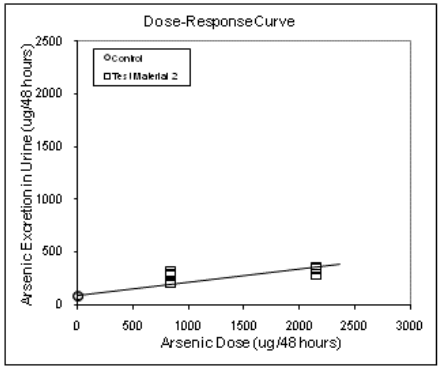


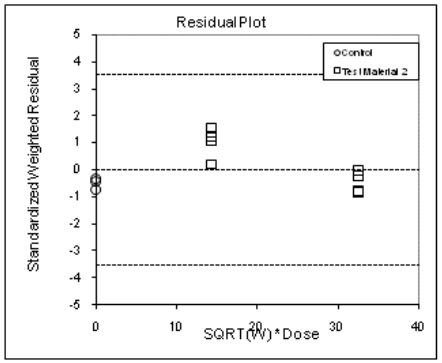
Test Material 1
VBI70 TM4



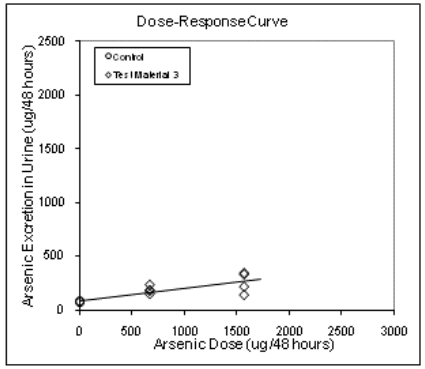


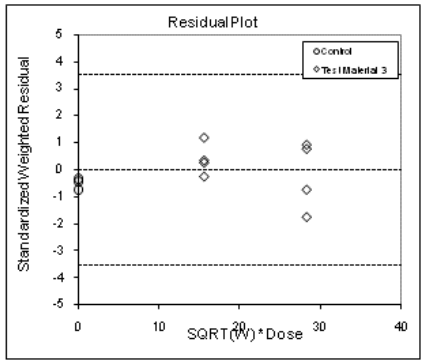
Test Material 2
VBI70 TM5





Test Material 3
VBI70 TM6





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	94.0	15.5
b1	0.65	0.06
b2	0.14	0.03
b3	0.12	0.02
b4	0.12	0.03
Covariance (b1,b2)	0.0818	–
Covariance (b1,b3)	0.0725	–
Covariance (b1,b4)	0.0885	–
Degrees of Freedom	31	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	323.05	4	80.76
Error	59.73	30	1.99
Total	382.78	34	11.26

Statistic	Estimate
F	40.564
p	< 0.001
Adjusted R^2	0.8232

RBA and Uncertainty

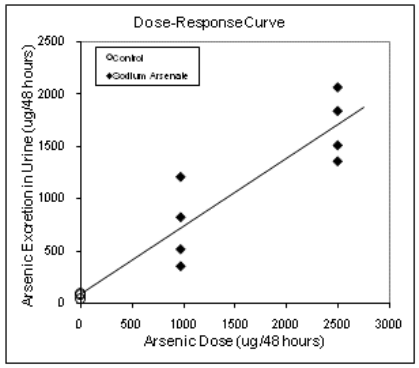
	Test Material 1	Test Material 2	Test Material 3
RBA	0.22	0.19	0.18
Lower bound[b]	0.15	0.13	0.11
Upper bound[b]	0.29	0.26	0.25
Standard Error[b]	0.043	0.037	0.041

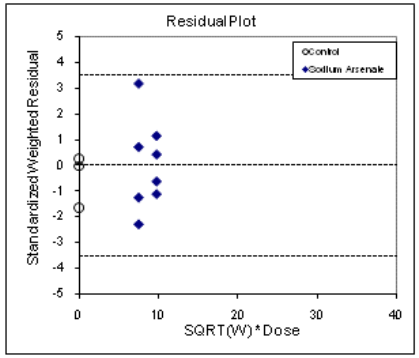
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 12b - All Data

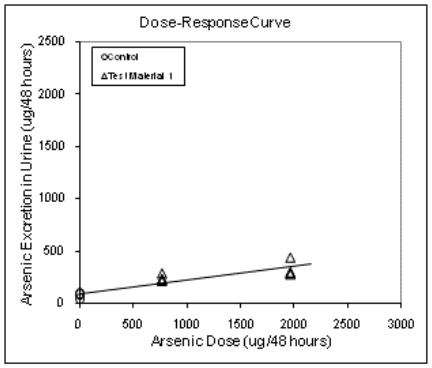
Phase III Experiment 2
Days 8/9

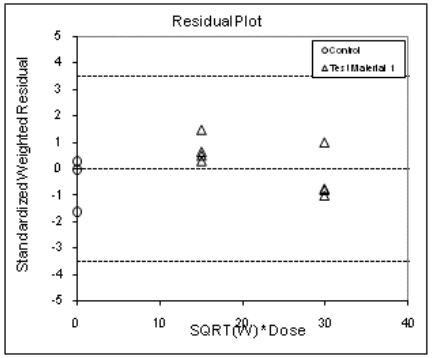
Reference Material
Sodium Arsenate



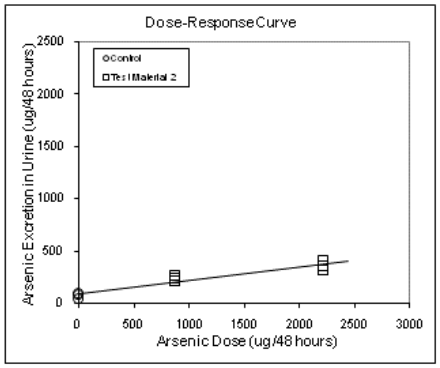


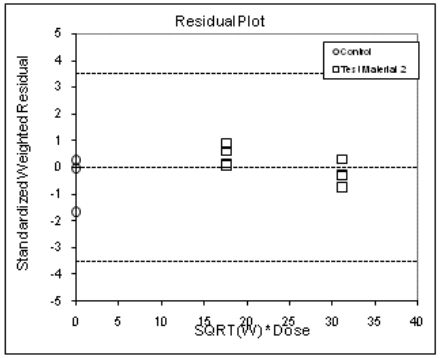
Test Material 1
VBI70 TM4



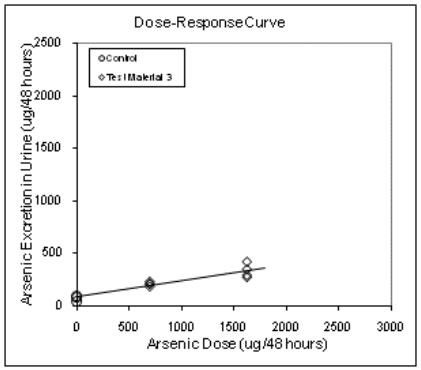


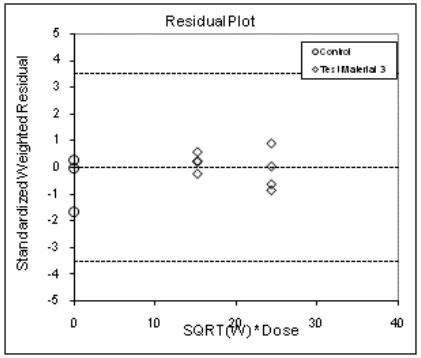
Test Material 2
VBI70 TM5





Test Material 3
VBI70 TM6





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	87.7	13.9
b1	0.65	0.05
b2	0.14	0.02
b3	0.13	0.02
b4	0.16	0.03
Covariance (b1,b2)	0.0708	–
Covariance (b1,b3)	0.0702	–
Covariance (b1,b4)	0.0756	–
Degrees of Freedom	31	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	359.70	4	89.92
Error	50.87	30	1.70
Total	410.57	34	12.08

Statistic	Estimate
F	53.029
p	< 0.001
Adjusted R^2	0.8596

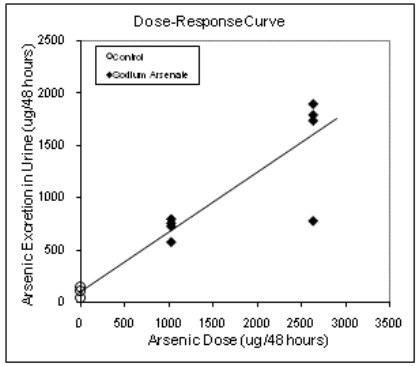
RBA and Uncertainty

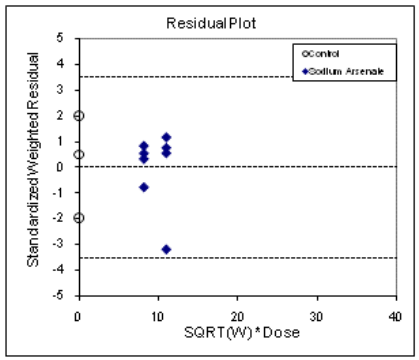
	Test Material 1	Test Material 2	Test Material 3
RBA	0.21	0.20	0.24
Lower bound[b]	0.15	0.15	0.17
Upper bound[b]	0.27	0.26	0.32
Standard Error[b]	0.036	0.034	0.043

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

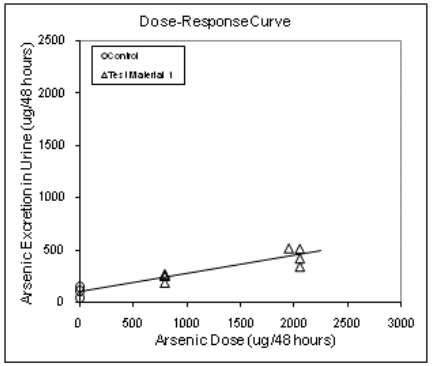
Figure 12c - All Data
Phase III Experiment 2
Days 10/11

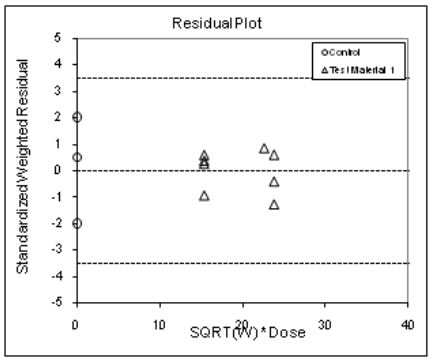
Reference Material
Sodium Arsenate



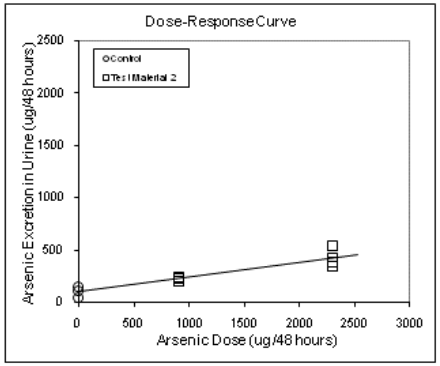


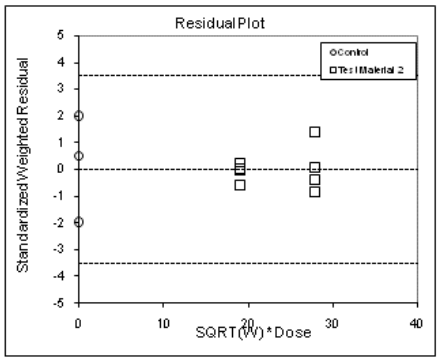
Test Material 1
VBI70 TM4



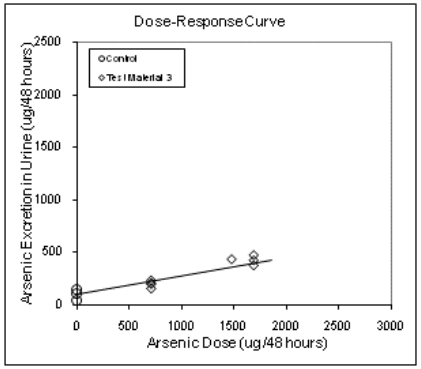


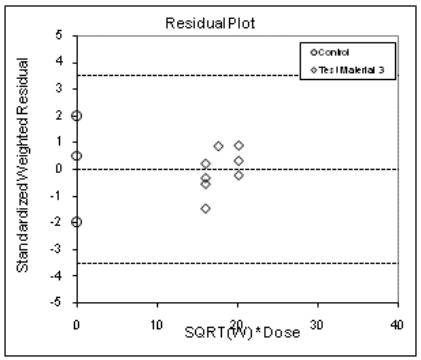
Test Material 2
VBI70 TM5





Test Material 3
VBI70 TM6





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	95.9	15.0
b1	0.57	0.04
b2	0.18	0.02
b3	0.14	0.02
b4	0.18	0.03
Covariance (b1,b2)	0.0955	–
Covariance (b1,b3)	0.1009	–
Covariance (b1,b4)	0.1069	–
Degrees of Freedom	31	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4$

ANOVA

Source	SSE	DF	MSE
Fit	329.77	4	82.44
Error	40.10	30	1.34
Total	369.87	34	10.88

Statistic	Estimate
F	61.673
p	< 0.001
Adjusted R^2	0.8771

RBA and Uncertainty

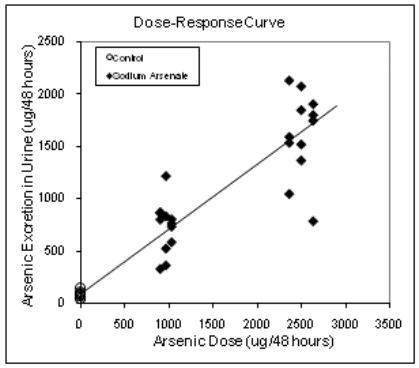
	Test Material 1	Test Material 2	Test Material 3
RBA	0.31	0.25	0.32
Lower bound[b]	0.24	0.18	0.23
Upper bound[b]	0.39	0.31	0.41
Standard Error[b]	0.045	0.037	0.050

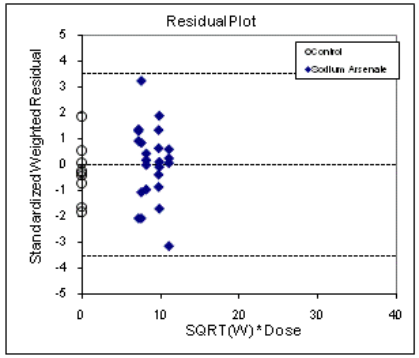
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 12d - All Data

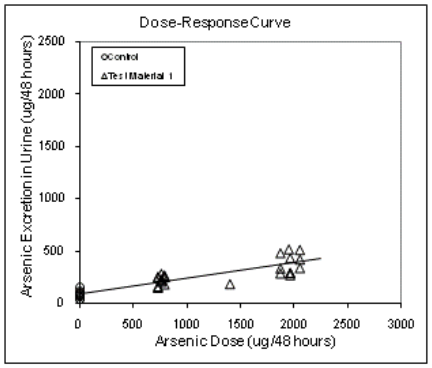
Phase III Experiment 2
All Days (Days 6/7, 8/9, 10/11)

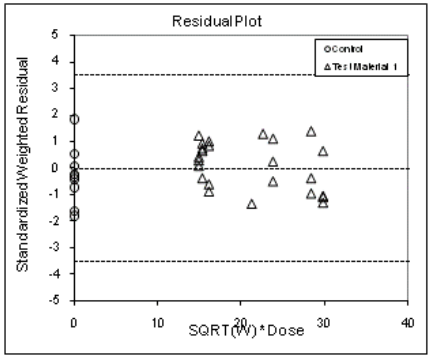
Reference Material
Sodium Arsenate



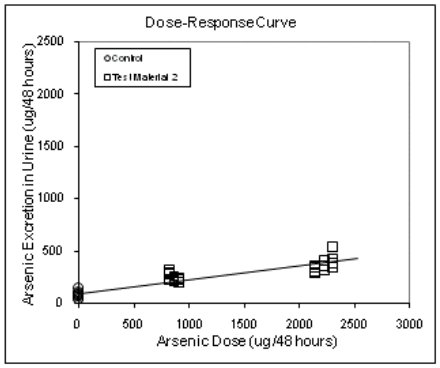


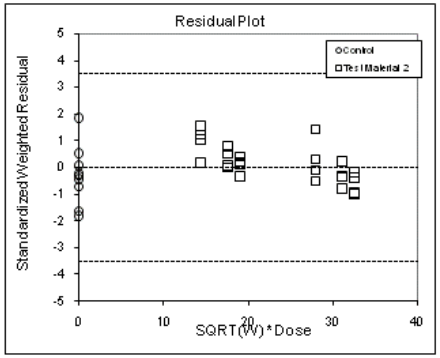
Test Material 1
VBI70 TM4



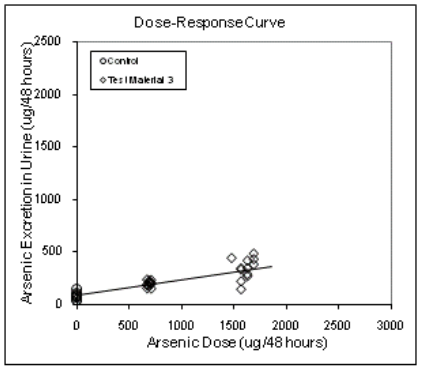


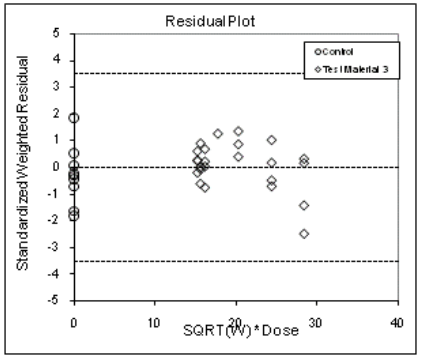
Test Material 2
VBI70 TM5





Test Material 3
VBI70 TM6





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	92.7	8.5
b1	0.62	0.03
b2	0.15	0.01
b3	0.13	0.01
b4	0.15	0.01
Covariance (b1,b2)	0.0810	–
Covariance (b1,b3)	0.0789	–
Covariance (b1,b4)	0.0883	–
Degrees of Freedom	101	–

[a] y = a + b1*x1 + b2*x2 + b3*x3 + b4*x4

ANOVA

Source	SSE	DF	MSE
Fit	1008.06	4	252.02
Error	165.77	100	1.66
Total	1173.83	104	11.29

Statistic	Estimate
F	152.027
p	< 0.001
Adjusted R^2	0.8531

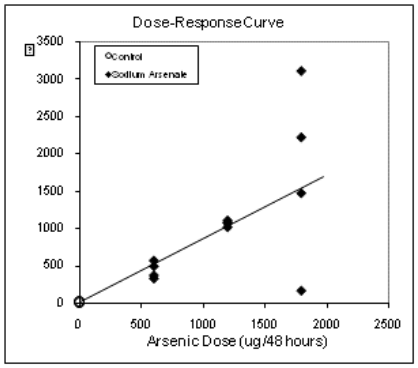
RBA and Uncertainty

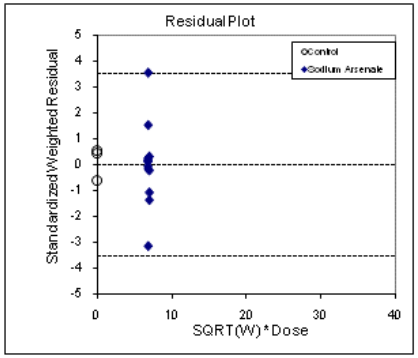
	Test Material 1	Test Material 2	Test Material 3
RBA	0.24	0.21	0.24
Lower bound[b]	0.20	0.18	0.19
Upper bound[b]	0.28	0.25	0.28
Standard Error[b]	0.024	0.021	0.026

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

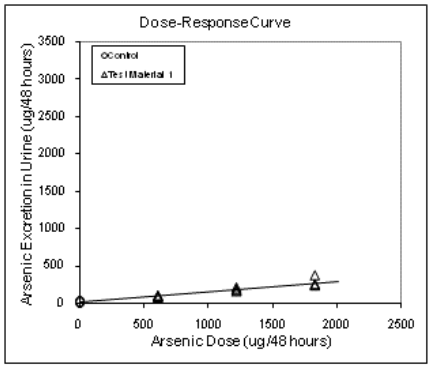
Figure 13a - All Data
Phase III Experiment 3
Days 6/7

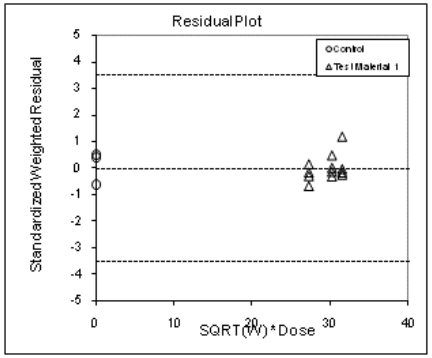
Reference Material
Sodium Arsenate



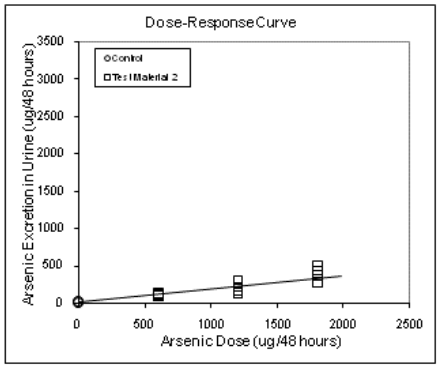


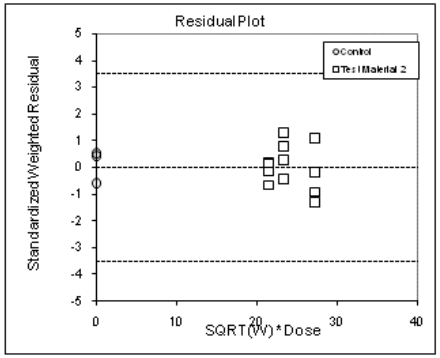
Test Material 1
Butte TM1



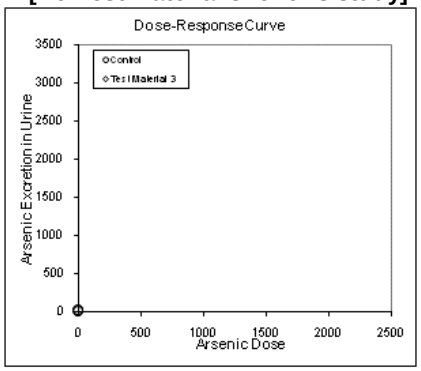


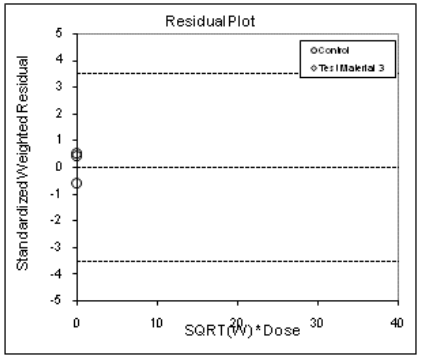
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	15.0	5.6
b1	0.85	0.07
b2	0.13	0.02
b3	0.17	0.02
b4	–	–
Covariance (b1,b2)	0.0235	–
Covariance (b1,b3)	0.0198	–
Covariance (b1,b4)	–	–
Degrees of Freedom	36	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	731.53	3	243.84
Error	108.48	35	3.10
Total	840.01	38	22.11

Statistic	Estimate
F	78.674
p	< 0.001
Adjusted R^2	0.8598

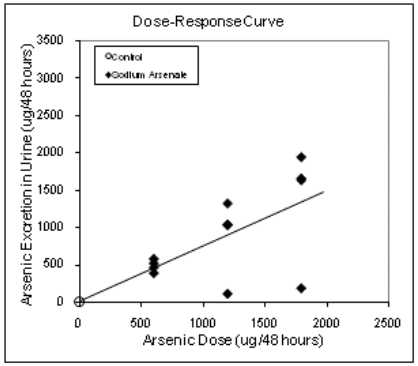
RBA and Uncertainty

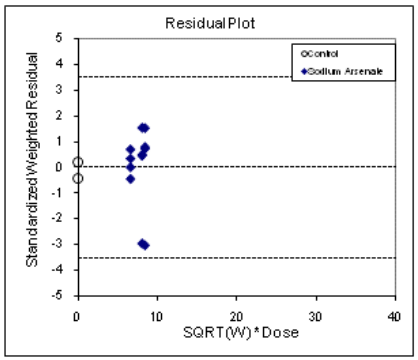
	Test Material 1	Test Material 2	Test Material 3
RBA	0.16	0.20	–
Lower bound[b]	0.12	0.16	–
Upper bound[b]	0.20	0.26	–
Standard Error[b]	0.025	0.031	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

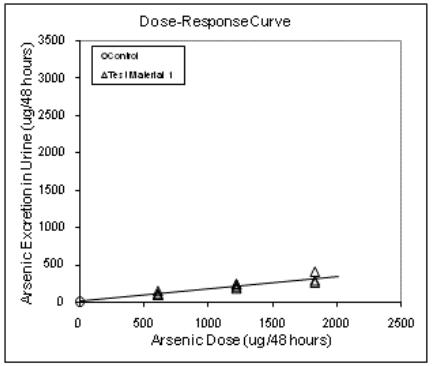
Figure 13b - All Data
Phase III Experiment 3
Days 8/9

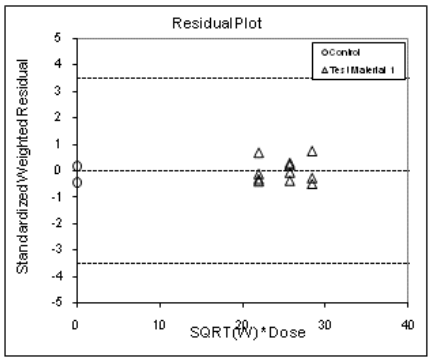
Reference Material
Sodium Arsenate



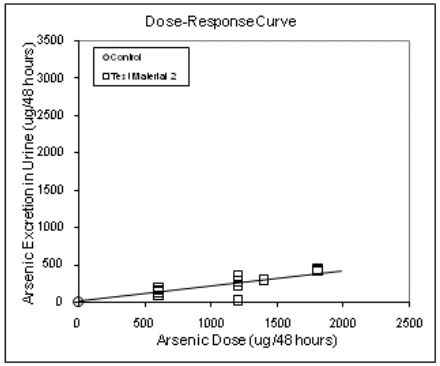


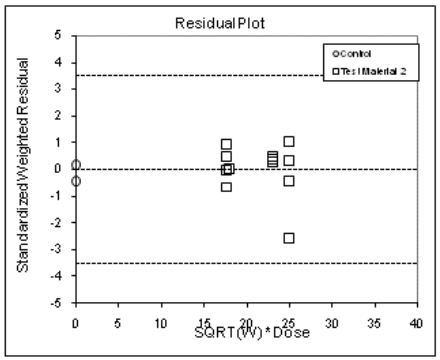
Test Material 1
Butte TM1



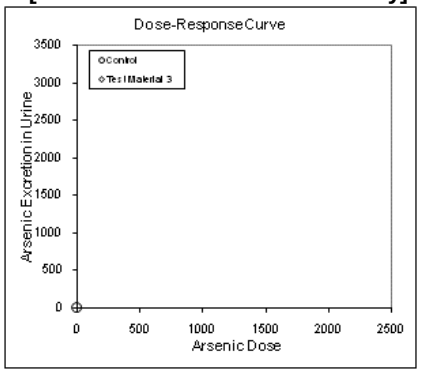


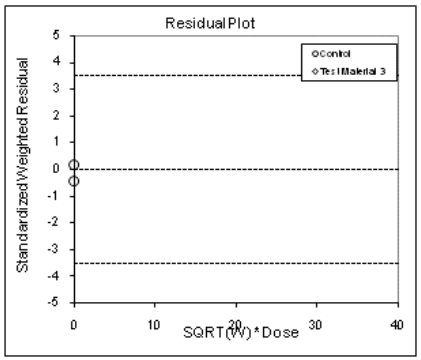
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	13.3	5.2
b1	0.74	0.07
b2	0.17	0.02
b3	0.20	0.03
b4	–	–
Covariance (b1,b2)	0.0143	–
Covariance (b1,b3)	0.0127	–
Covariance (b1,b4)	–	–
Degrees of Freedom	35	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	769.43	3	256.48
Error	122.72	34	3.61
Total	892.15	37	24.11

Statistic	Estimate
F	71.060
p	< 0.001
Adjusted R^2	0.8503

RBA and Uncertainty

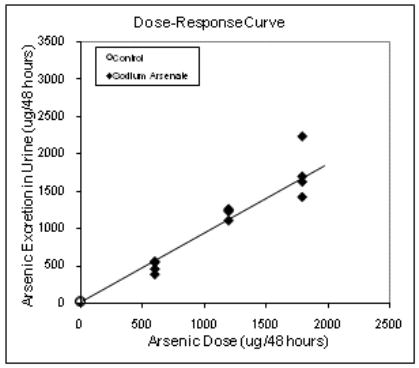
	Test Material 1	Test Material 2	Test Material 3
RBA	0.22	0.27	–
Lower bound[b]	0.16	0.20	–
Upper bound[b]	0.29	0.35	–
Standard Error[b]	0.038	0.043	–

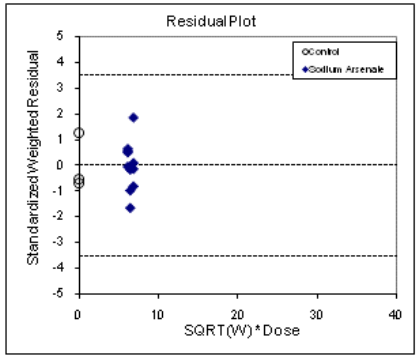
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 13c - All Data

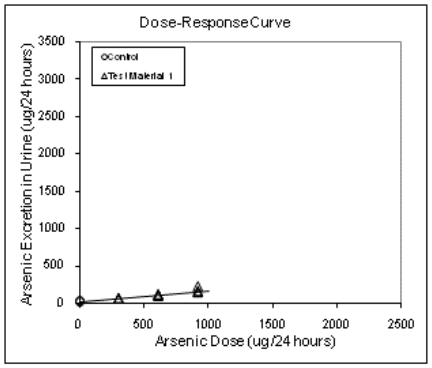
Phase III Experiment 3
Days 10/11

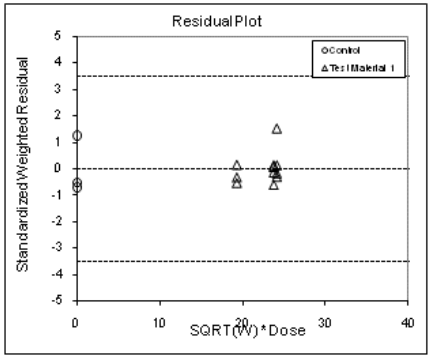
Reference Material
Sodium Arsenate



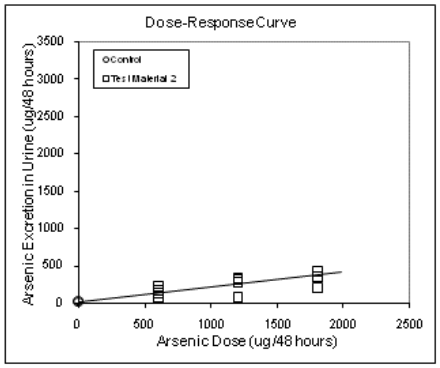


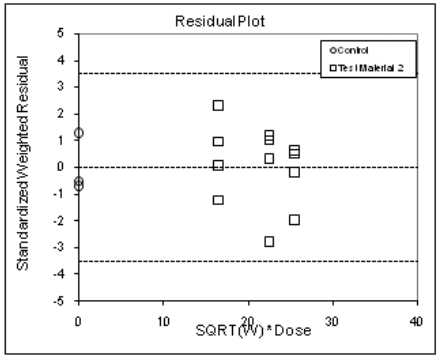
Test Material 1
Butte TM1



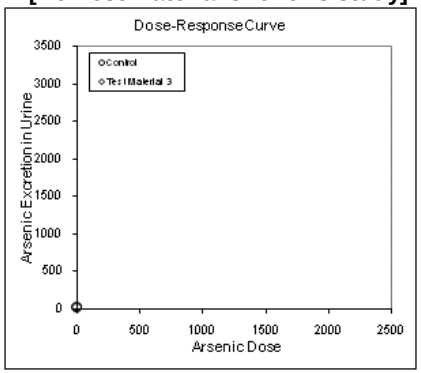


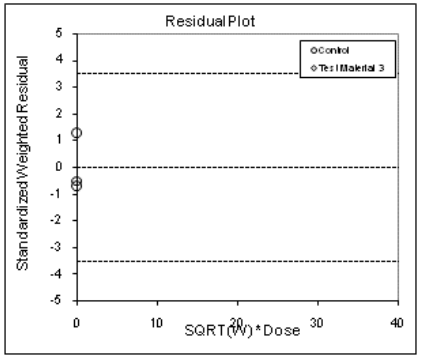
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	16.1	3.9
b1	0.92	0.05
b2	0.15	0.02
b3	0.20	0.02
b4	–	–
Covariance (b1,b2)	0.0279	–
Covariance (b1,b3)	0.0148	–
Covariance (b1,b4)	–	–
Degrees of Freedom	35	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	706.86	3	235.62
Error	49.54	34	1.46
Total	756.40	37	20.44

Statistic	Estimate
F	161.714
p	< 0.001
Adjusted R^2	0.9287

RBA and Uncertainty

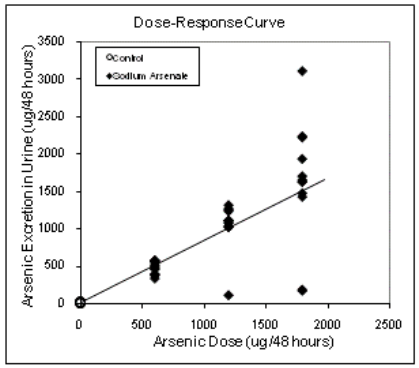
	Test Material 1	Test Material 2	Test Material 3
RBA	0.16	0.22	–
Lower bound[b]	0.13	0.18	–
Upper bound[b]	0.20	0.25	–
Standard Error[b]	0.021	0.022	–

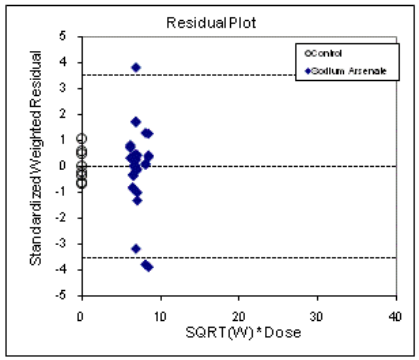
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 13d - All Data
Phase III Experiment 3

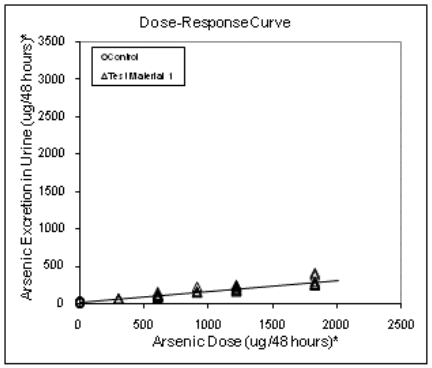
All Days (Days 6/7, 8/9, 10/11)

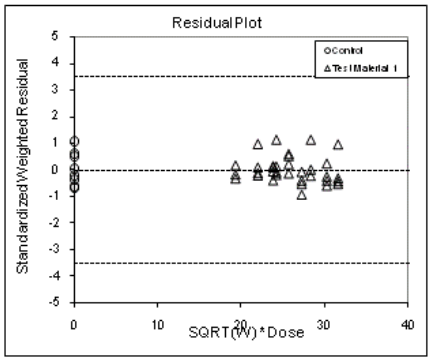
Reference Material
Sodium Arsenate



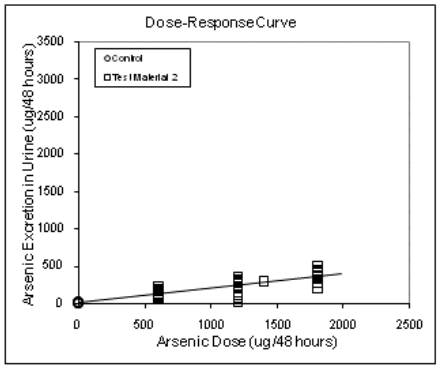


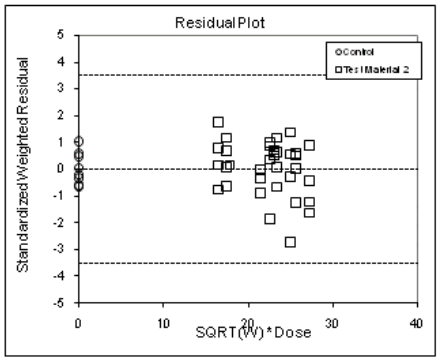
Test Material 1
Butte TM1



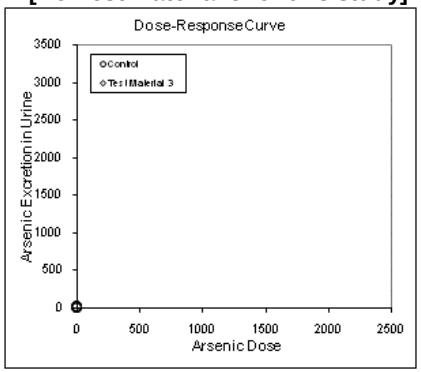


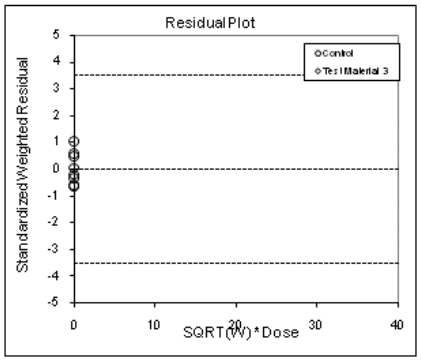
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	14.7	2.8
b1	0.83	0.04
b2	0.15	0.01
b3	0.19	0.01
b4	–	–
Covariance (b1,b2)	0.0208	–
Covariance (b1,b3)	0.0153	–
Covariance (b1,b4)	–	–
Degrees of Freedom	112	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	2198.27	3	732.76
Error	298.38	111	2.69
Total	2496.65	114	21.90

Statistic	Estimate
F	272.591
p	< 0.001
Adjusted R^2	0.8773

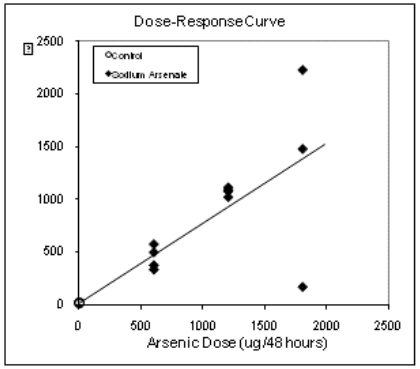
RBA and Uncertainty

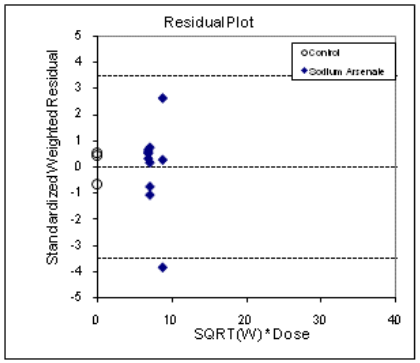
	Test Material 1	Test Material 2	Test Material 3
RBA	0.18	0.23	–
Lower bound[b]	0.15	0.20	–
Upper bound[b]	0.20	0.26	–
Standard Error[b]	0.016	0.018	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

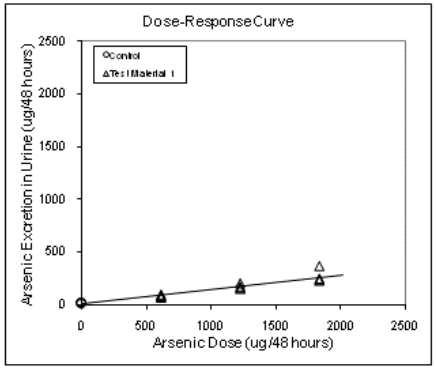
Figure 13a - Outliers Excluded
Phase III Experiment 3
Days 6/7

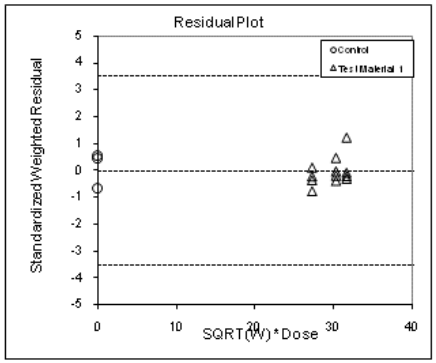
Reference Material
Sodium Arsenate



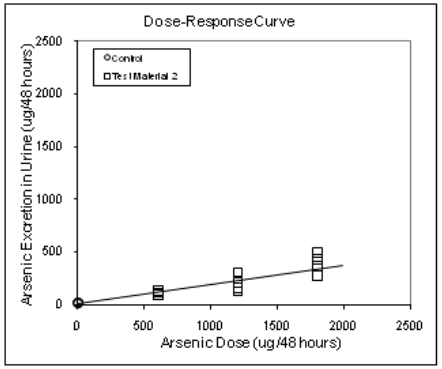


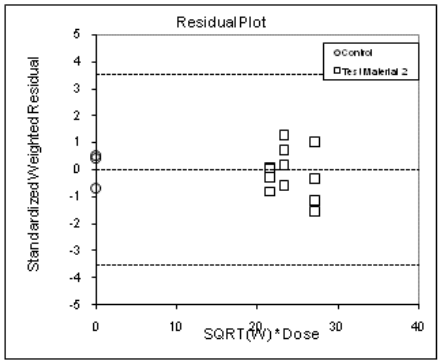
Test Material 1
Butte TM1



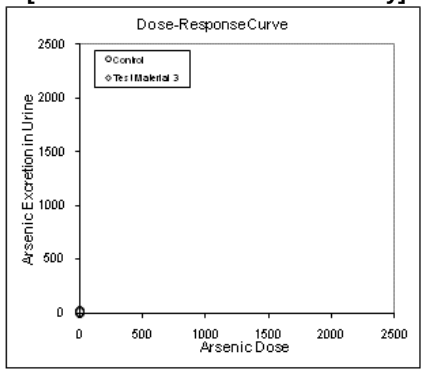


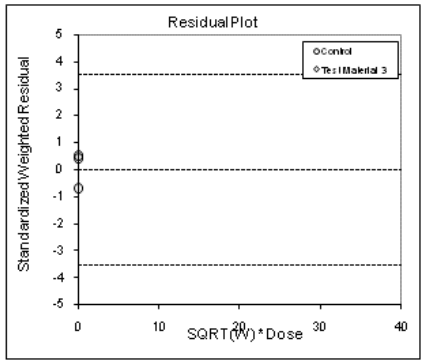
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	15.3	5.3
b1	0.76	0.07
b2	0.13	0.02
b3	0.18	0.02
b4	–	–
Covariance (b1,b2)	0.0215	–
Covariance (b1,b3)	0.0170	–
Covariance (b1,b4)	–	–
Degrees of Freedom	35	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	698.23	3	232.74
Error	90.52	34	2.66
Total	788.76	37	21.32

Statistic	Estimate
F	87.417
p	< 0.001
Adjusted R^2	0.8751

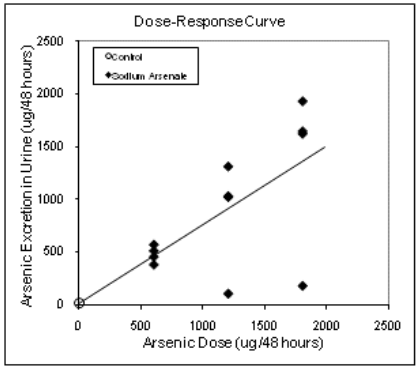
RBA and Uncertainty

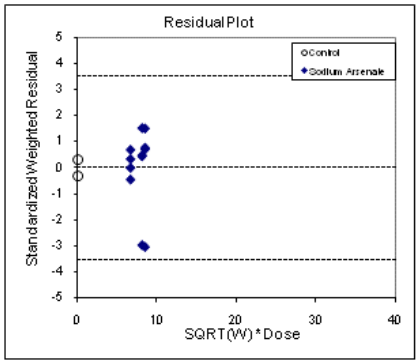
	Test Material 1	Test Material 2	Test Material 3
RBA	0.18	0.24	–
Lower bound[b]	0.13	0.19	–
Upper bound[b]	0.23	0.30	–
Standard Error[b]	0.027	0.034	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

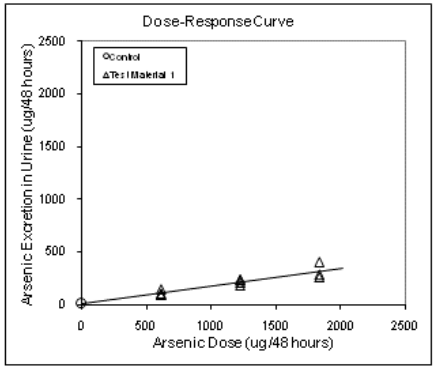
Figure 13b - Outliers Excluded
Phase III Experiment 3
Days 8/9

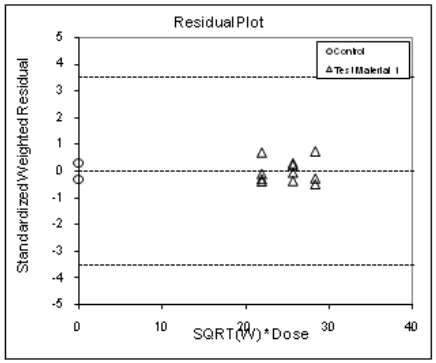
Reference Material
Sodium Arsenate



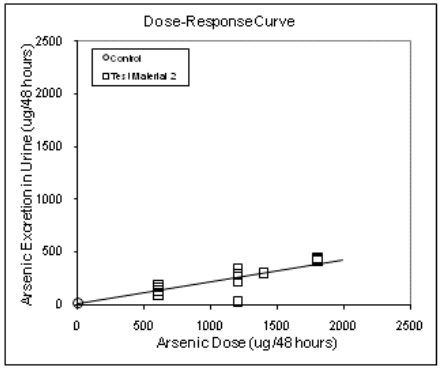


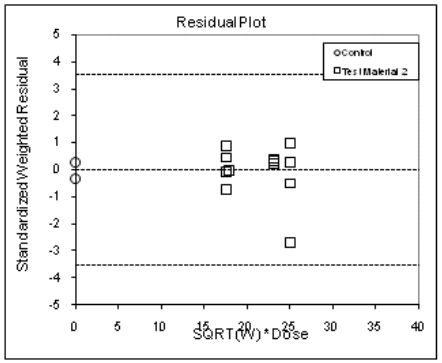
Test Material 1
Butte TM1



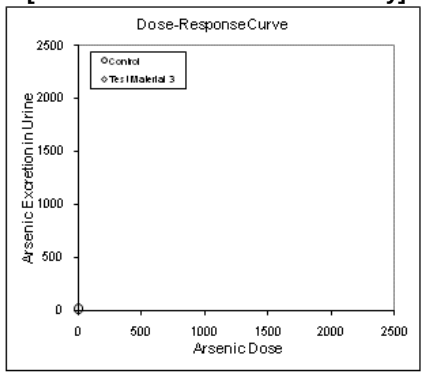


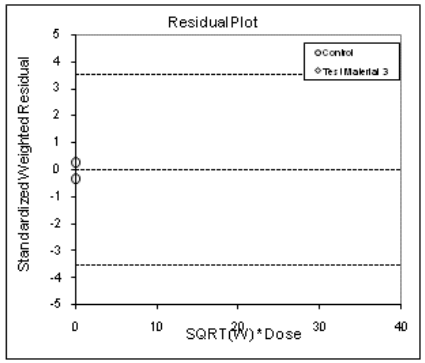
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	12.3	30.2
b1	0.75	0.07
b2	0.17	0.03
b3	0.21	0.03
b4	–	–
Covariance (b1,b2)	0.3243	–
Covariance (b1,b3)	0.3012	–
Covariance (b1,b4)	–	–
Degrees of Freedom	35	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	793.20	3	264.40
Error	123.10	34	3.62
Total	916.29	37	24.76

Statistic	Estimate
F	73.028
p	< 0.001
Adjusted R^2	0.8538

RBA and Uncertainty

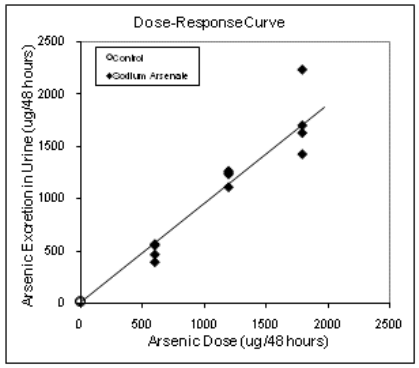
	Test Material 1	Test Material 2	Test Material 3
RBA	0.22	0.28	–
Lower bound[b]	0.15	0.20	–
Upper bound[b]	0.30	0.36	–
Standard Error[b]	0.041	0.046	–

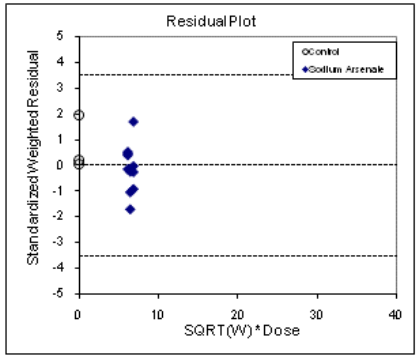
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 13c - Outliers Excluded

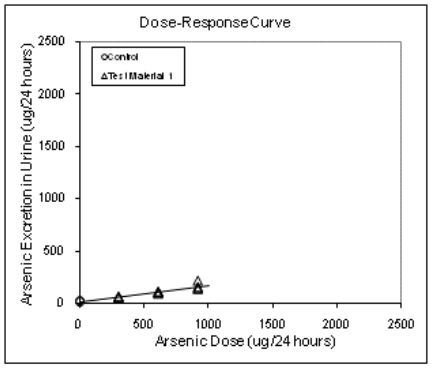
Phase III Experiment 3
Days 10/11

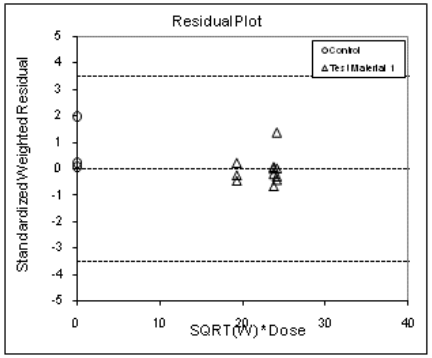
Reference Material
Sodium Arsenate



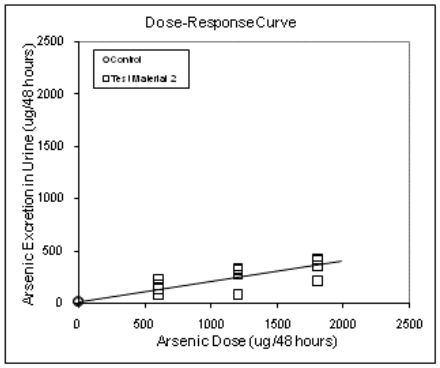


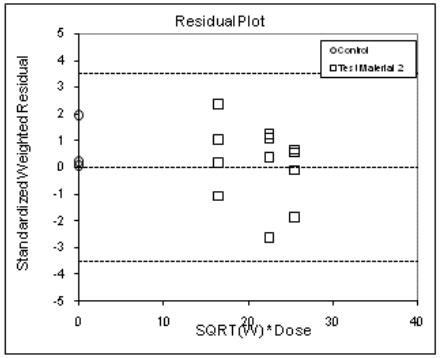
Test Material 1
Butte TM1



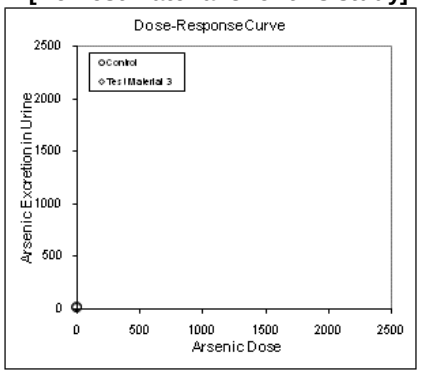


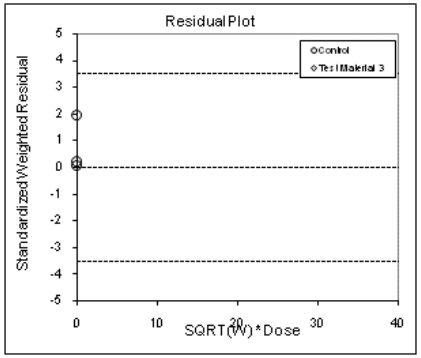
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	11.3	16.4
b1	0.94	0.05
b2	0.16	0.03
b3	0.20	0.02
b4	–	–
Covariance (b1,b2)	0.2141	–
Covariance (b1,b3)	0.1630	–
Covariance (b1,b4)	–	–
Degrees of Freedom	35	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	744.12	3	248.04
Error	52.13	34	1.53
Total	796.24	37	21.52

Statistic	Estimate
F	161.786
p	< 0.001
Adjusted R^2	0.9288

RBA and Uncertainty

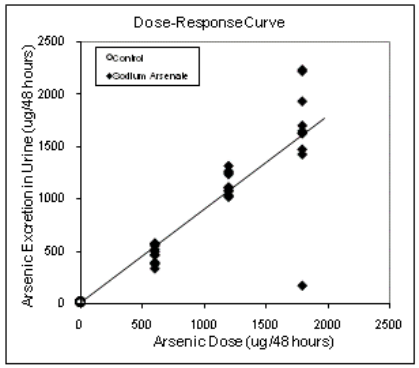
	Test Material 1	Test Material 2	Test Material 3
RBA	0.17	0.21	–
Lower bound[b]	0.11	0.17	–
Upper bound[b]	0.22	0.25	–
Standard Error[b]	0.032	0.022	–

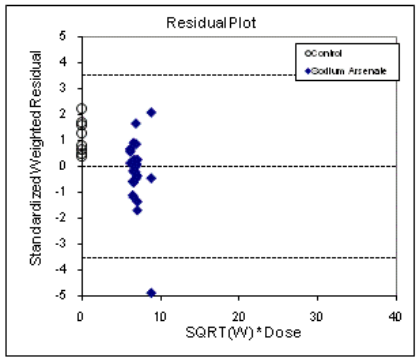
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 13d - Outliers Excluded
Phase III Experiment 3

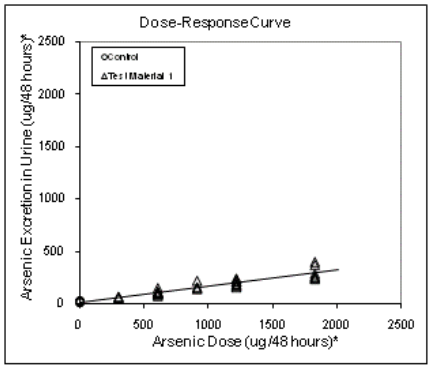
All Days (Days 6/7, 8/9, 10/11)

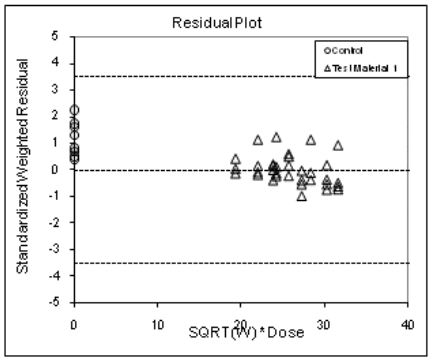
Reference Material
Sodium Arsenate



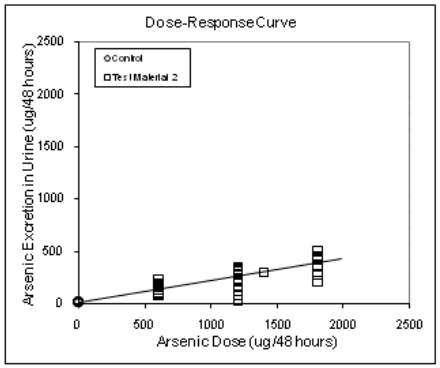


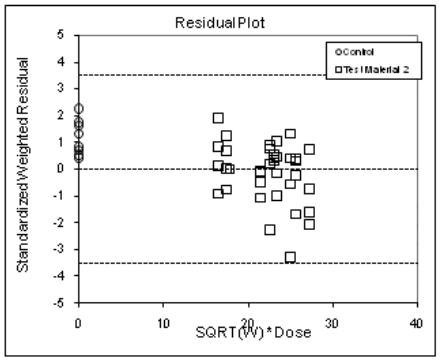
Test Material 1
Butte TM1



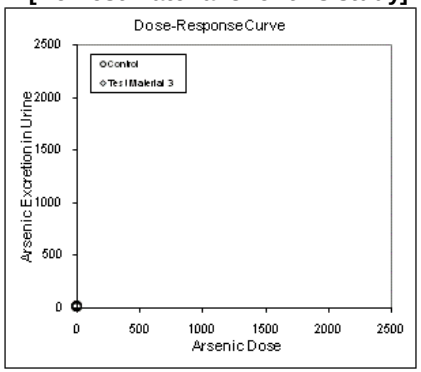


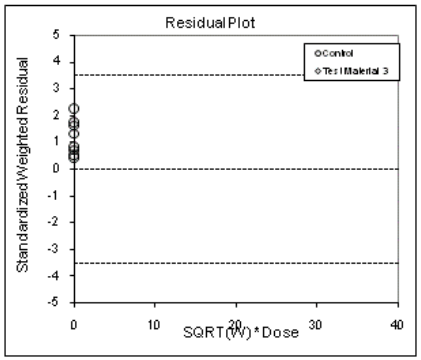
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	6.0	31.2
b1	0.89	0.04
b2	0.16	0.03
b3	0.21	0.02
b4	–	–
Covariance (b1,b2)	0.4063	–
Covariance (b1,b3)	0.4206	–
Covariance (b1,b4)	–	–
Degrees of Freedom	223	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	2430.12	3	810.04
Error	232.67	108	2.15
Total	2662.78	111	23.99

Statistic	Estimate
F	376.004
p	< 0.001
Adjusted R^2	0.9102

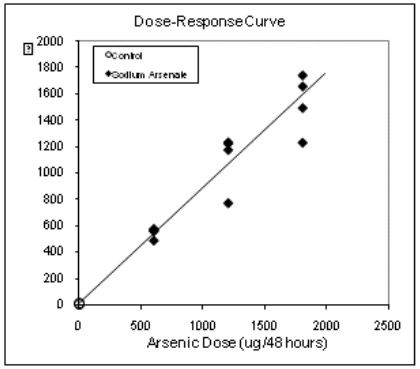
RBA and Uncertainty

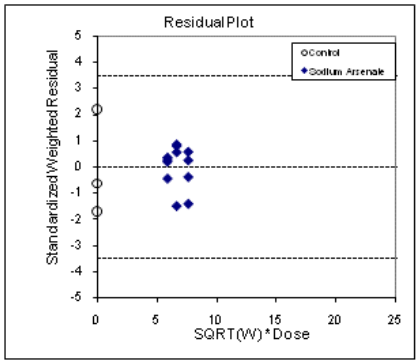
	Test Material 1	Test Material 2	Test Material 3
RBA	0.18	0.24	–
Lower bound[b]	0.12	0.20	–
Upper bound[b]	0.23	0.28	–
Standard Error[b]	0.032	0.024	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

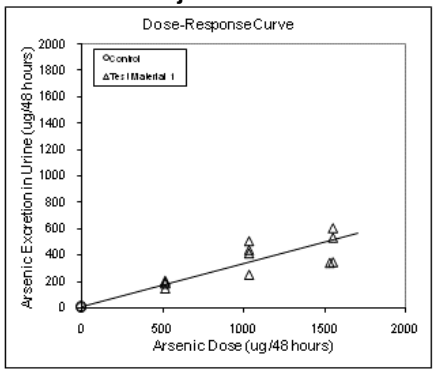
Figure 14a - All Data
Phase III Experiment 4
Days 6/7

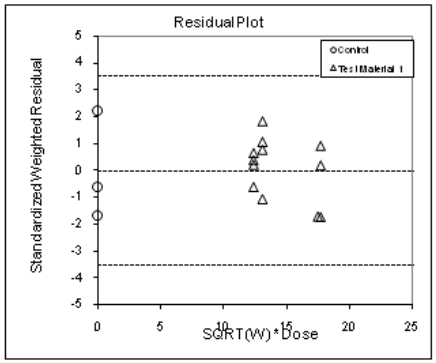
Reference Material
Sodium Arsenate



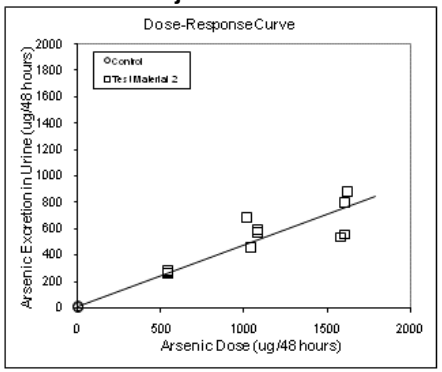


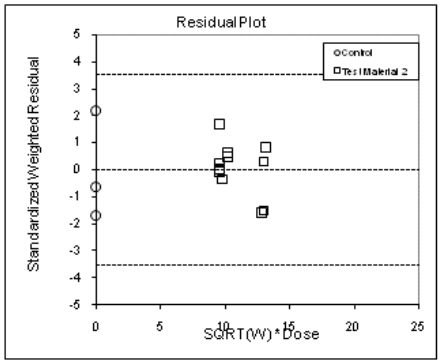
Test Material 1
Aberjona River TM1



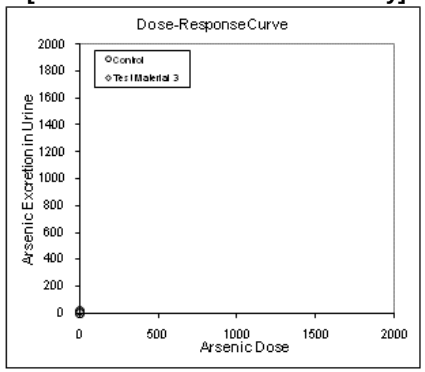


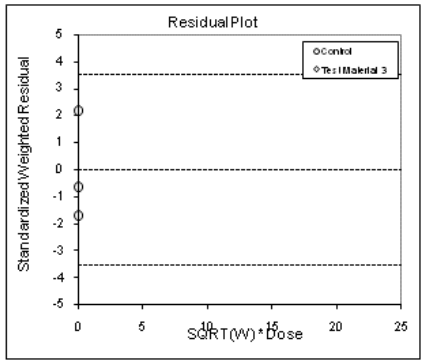
Test Material 2
Aberjona River TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	9.5	2.4
b1	0.88	0.05
b2	0.33	0.02
b3	0.47	0.03
b4	–	–
Covariance (b1,b2)	0.0049	–
Covariance (b1,b3)	0.0036	–
Covariance (b1,b4)	–	–
Degrees of Freedom	36	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	1000.85	3	333.62
Error	46.94	35	1.34
Total	1047.79	38	27.57

Statistic	Estimate
F	248.746
p	< 0.001
Adjusted R^2	0.9514

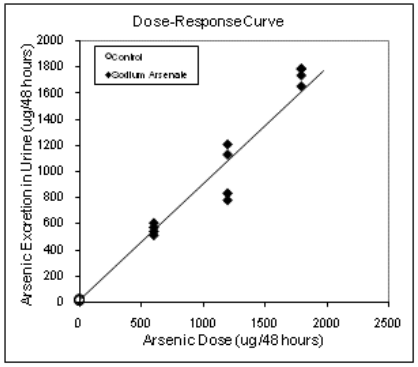
RBA and Uncertainty

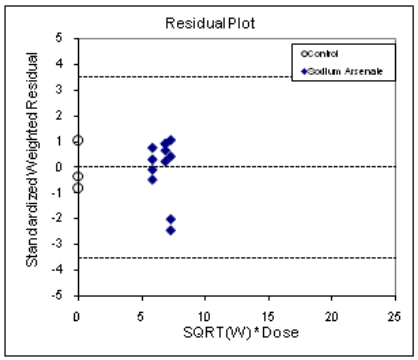
	Test Material 1	Test Material 2	Test Material 3
RBA	0.37	0.53	–
Lower bound[b]	0.32	0.46	–
Upper bound[b]	0.43	0.61	–
Standard Error[b]	0.033	0.046	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

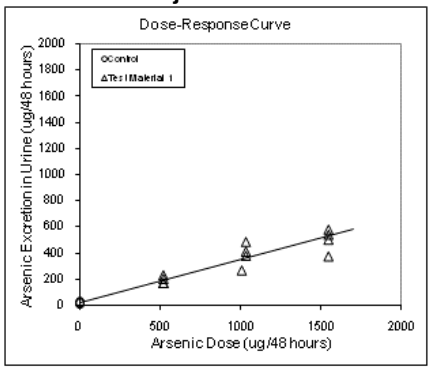
Figure 14b - All Data
Phase III Experiment 4
Days 8/9

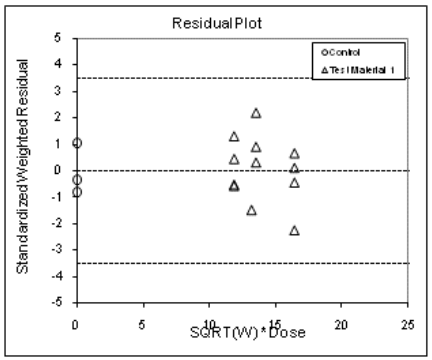
Reference Material
Sodium Arsenate



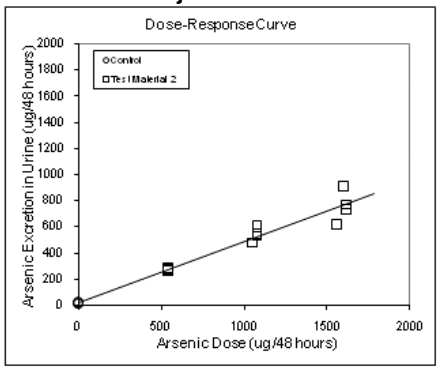


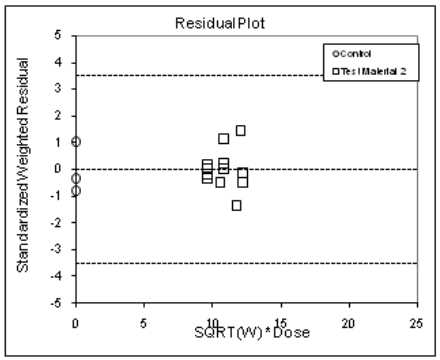
Test Material 1
Aberjona River TM1



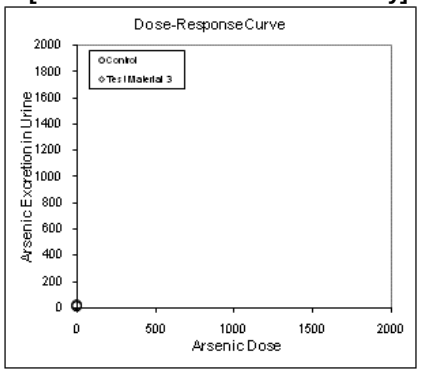


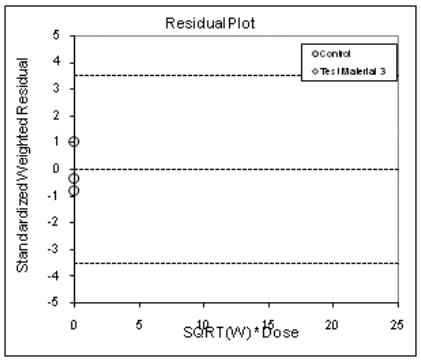
Test Material 2
Aberjona River TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	17.1	2.6
b1	0.89	0.03
b2	0.34	0.02
b3	0.47	0.02
b4	–	–
Covariance (b1,b2)	0.0126	–
Covariance (b1,b3)	0.0097	–
Covariance (b1,b4)	–	–
Degrees of Freedom	36	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	957.80	3	319.27
Error	21.35	35	0.61
Total	979.15	38	25.77

Statistic	Estimate
F	523.460
p	< 0.001
Adjusted R^2	0.9763

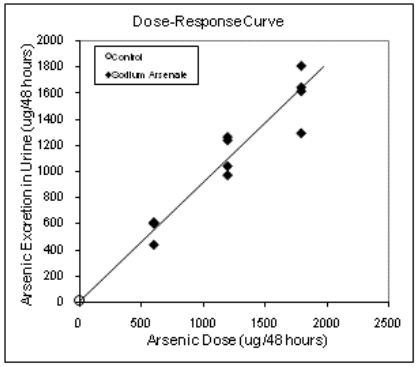
RBA and Uncertainty

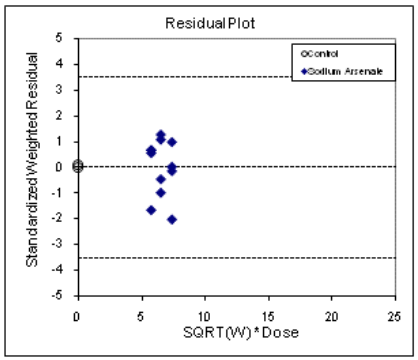
	Test Material 1	Test Material 2	Test Material 3
RBA	0.38	0.53	–
Lower bound[b]	0.34	0.48	–
Upper bound[b]	0.42	0.59	–
Standard Error[b]	0.023	0.031	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

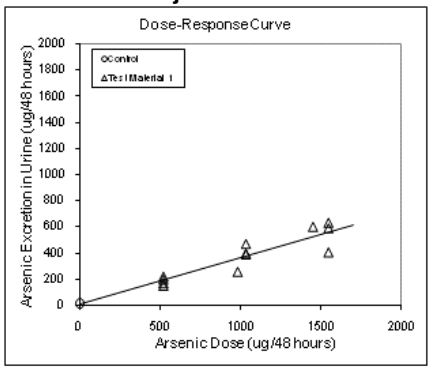
Figure 14c - All Data
Phase III Experiment 4
Days 10/11

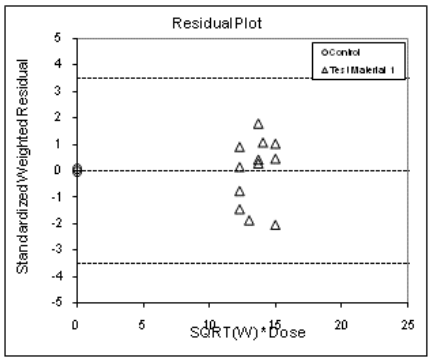
Reference Material
Sodium Arsenate



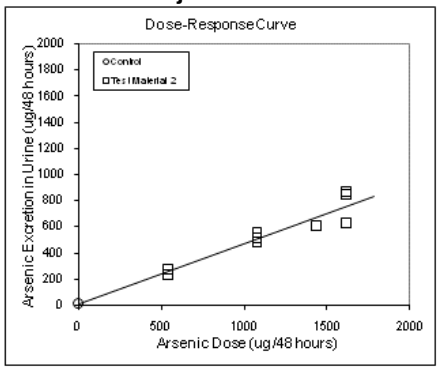


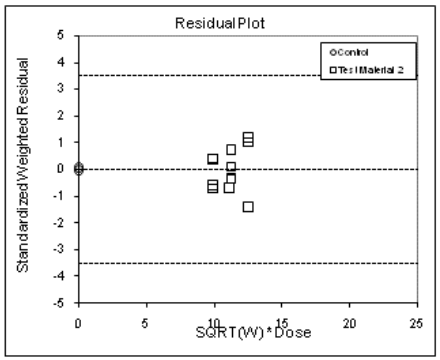
Test Material 1
Aberjona River TM1



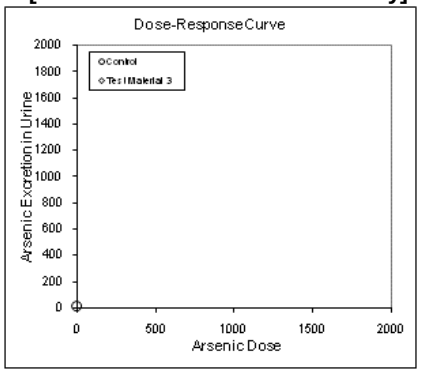


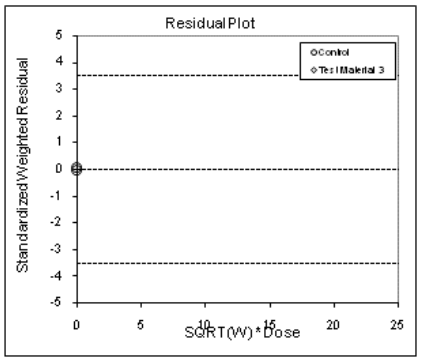
Test Material 2
Aberjona River TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	13.4	2.5
b1	0.90	0.03
b2	0.35	0.02
b3	0.46	0.02
b4	–	–
Covariance (b1,b2)	0.0130	–
Covariance (b1,b3)	0.0102	–
Covariance (b1,b4)	–	–
Degrees of Freedom	35	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	971.32	3	323.77
Error	18.70	34	0.55
Total	990.02	37	26.76

Statistic	Estimate
F	588.606
p	< 0.001
Adjusted R^2	0.9794

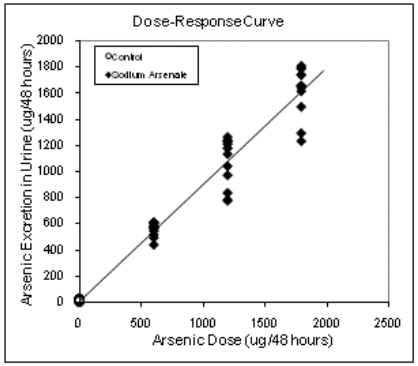
RBA and Uncertainty

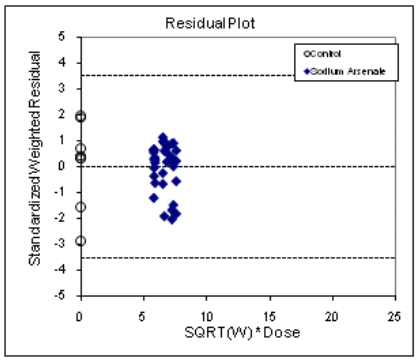
	Test Material 1	Test Material 2	Test Material 3
RBA	0.39	0.51	–
Lower bound[b]	0.35	0.46	–
Upper bound[b]	0.43	0.56	–
Standard Error[b]	0.022	0.028	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

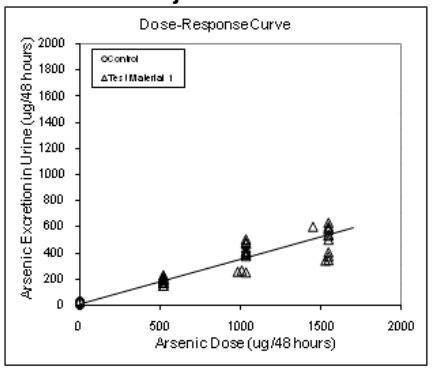
Figure 14d - All Data
Phase III Experiment 4
All Days (Days 6/7, 8/9, 10/11)

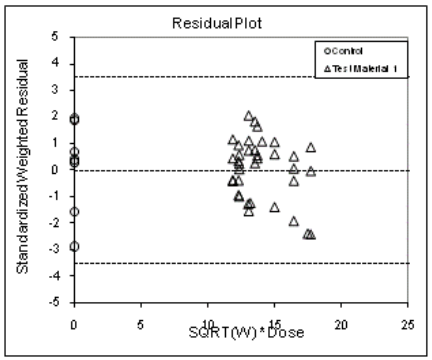
Reference Material
Sodium Arsenate



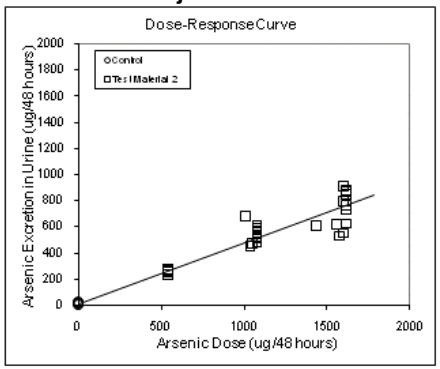


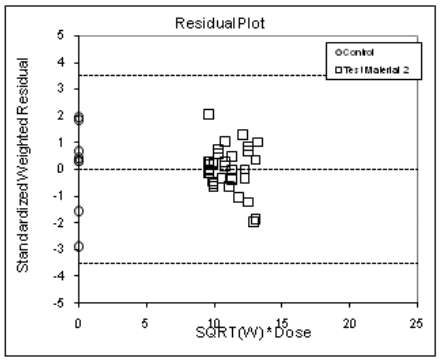
Test Material 1
Aberjona River TM1



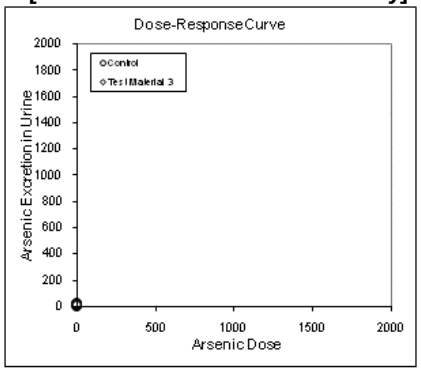


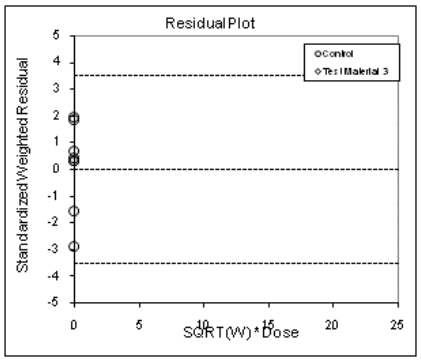
Test Material 2
Aberjona River TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	12.0	1.4
b1	0.89	0.02
b2	0.34	0.01
b3	0.47	0.01
b4	–	–
Covariance (b1,b2)	0.0082	–
Covariance (b1,b3)	0.0063	–
Covariance (b1,b4)	–	–
Degrees of Freedom	113	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	2963.80	3	987.93
Error	92.38	112	0.82
Total	3056.18	115	26.58

Statistic	Estimate
F	1197.728
p	< 0.001
Adjusted R^2	0.9690

RBA and Uncertainty

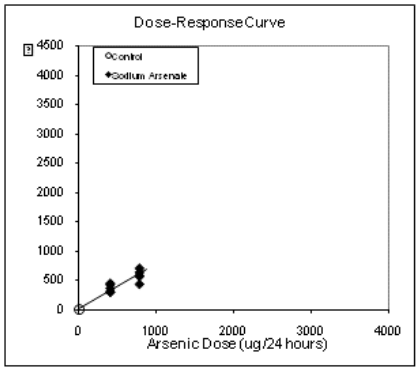
	Test Material 1	Test Material 2	Test Material 3
RBA	0.38	0.52	–
Lower bound[b]	0.36	0.49	–
Upper bound[b]	0.41	0.56	–
Standard Error[b]	0.016	0.020	–

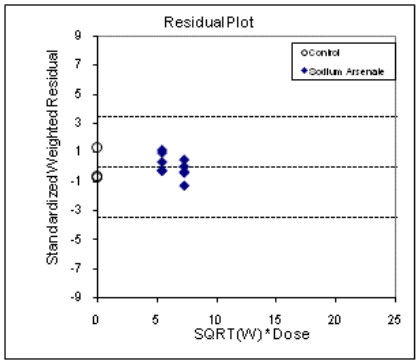
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 15a - All Data

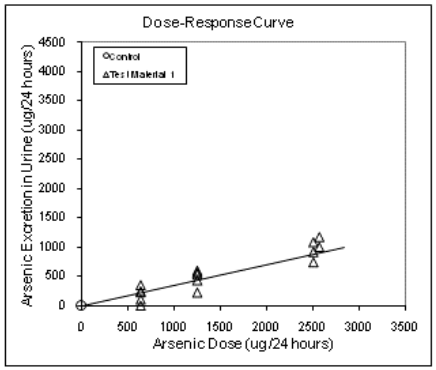
Phase III Experiment 5
Day 8

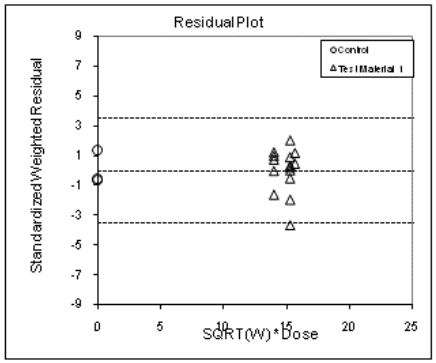
Reference Material
Sodium Arsenate



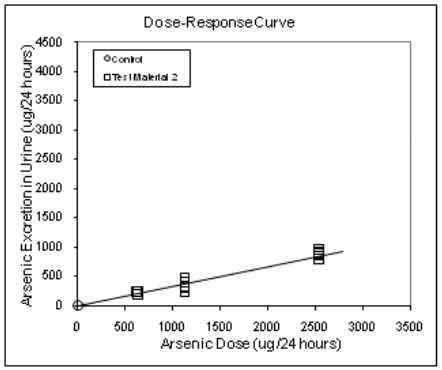


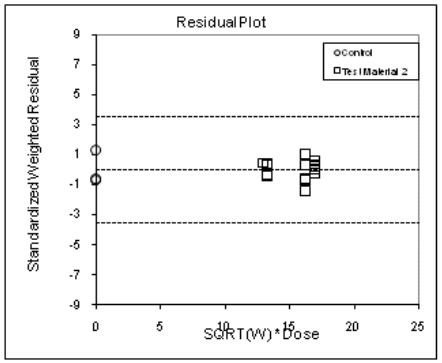
Test Material 1
El Paso TM1



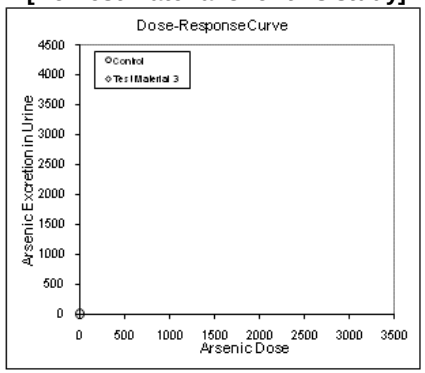


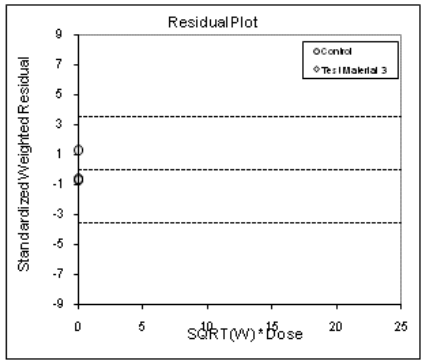
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	6.0	2.2
b1	0.80	0.08
b2	0.35	0.03
b3	0.33	0.03
b4	–	–
Covariance (b1,b2)	0.0040	–
Covariance (b1,b3)	0.0039	–
Covariance (b1,b4)	–	–
Degrees of Freedom	40	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	1038.07	3	346.02
Error	90.83	39	2.33
Total	1128.90	42	26.88

Statistic	Estimate
F	148.565
p	< 0.001
Adjusted R^2	0.9133

RBA and Uncertainty

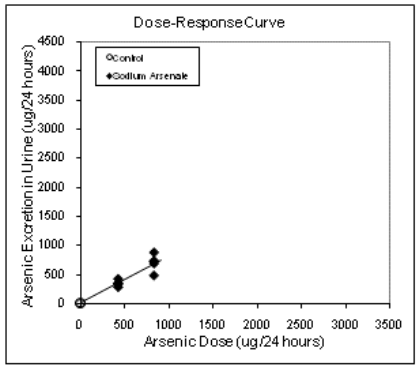
	Test Material 1	Test Material 2	Test Material 3
RBA	0.43	0.41	–
Lower bound[b]	0.35	0.33	–
Upper bound[b]	0.53	0.51	–
Standard Error[b]	0.052	0.050	–

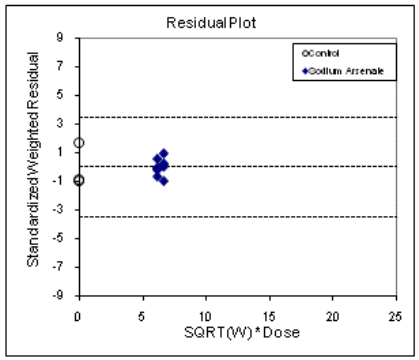
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 15b - All Data
Phase III Experiment 5

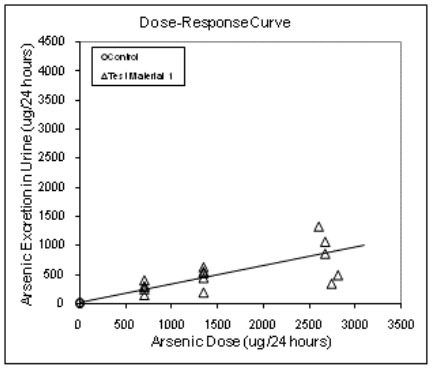
Day 11

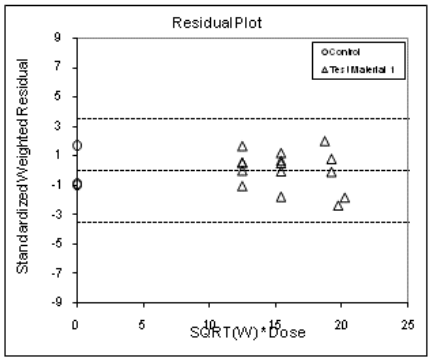
Reference Material
Sodium Arsenate



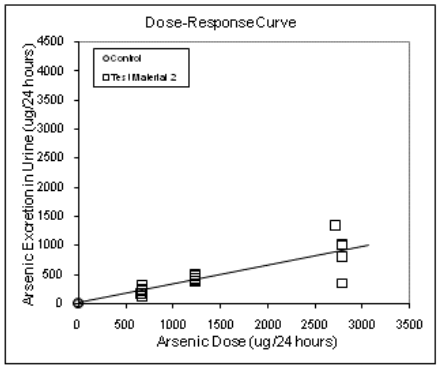


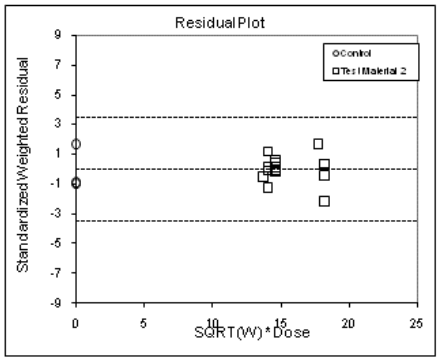
Test Material 1
El Paso TM1



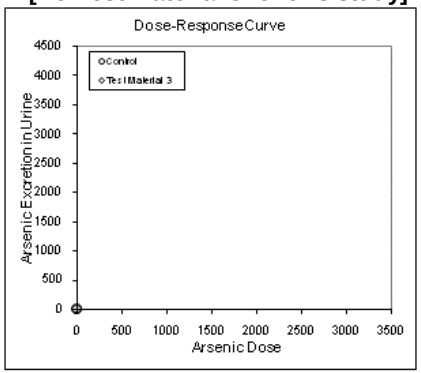


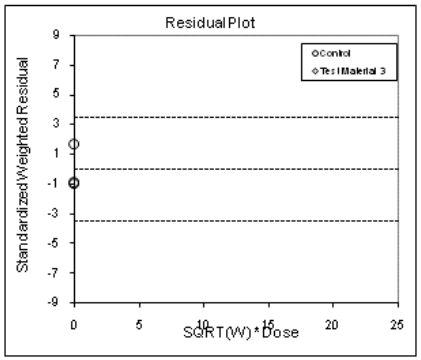
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.2	3.3
b1	0.82	0.09
b2	0.32	0.03
b3	0.33	0.03
b4	–	–
Covariance (b1,b2)	0.0051	–
Covariance (b1,b3)	0.0057	–
Covariance (b1,b4)	–	–
Degrees of Freedom	40	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	1044.81	3	348.27
Error	123.33	39	3.16
Total	1168.14	42	27.81

Statistic	Estimate
F	110.128
p	< 0.001
Adjusted R^2	0.8863

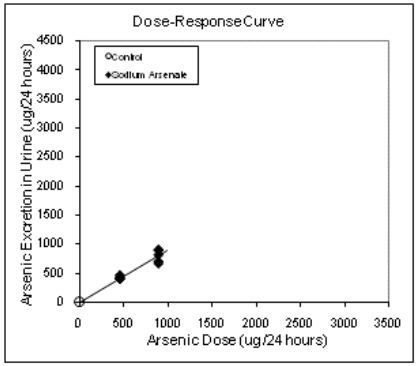
RBA and Uncertainty

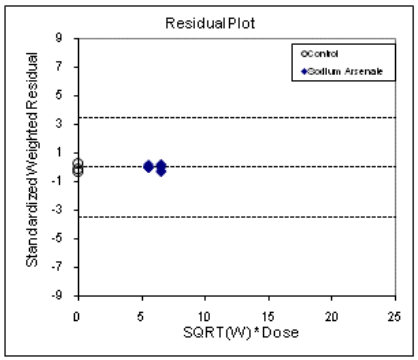
	Test Material 1	Test Material 2	Test Material 3
RBA	0.39	0.40	–
Lower bound[b]	0.31	0.32	–
Upper bound[b]	0.50	0.51	–
Standard Error[b]	0.055	0.056	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

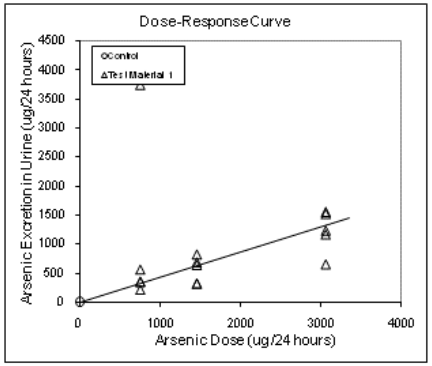
Figure 15c - All Data
Phase III Experiment 5
Day 14

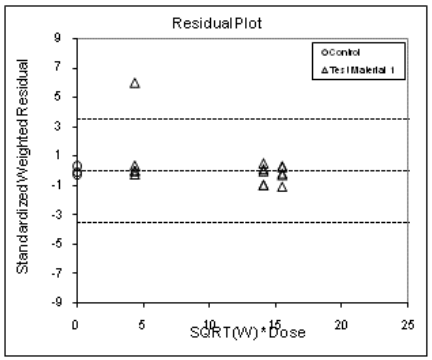
Reference Material
Sodium Arsenate



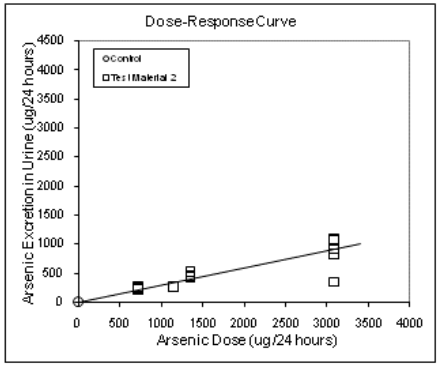


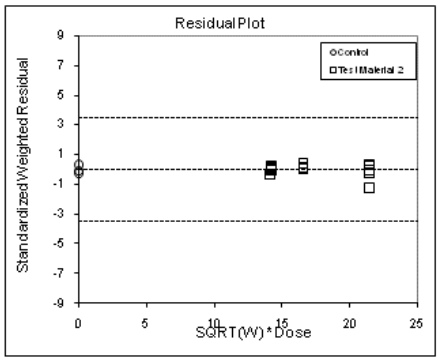
Test Material 1
El Paso TM1



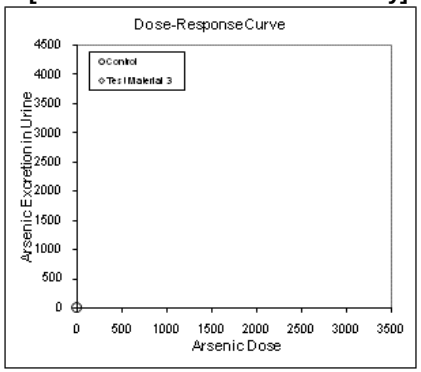


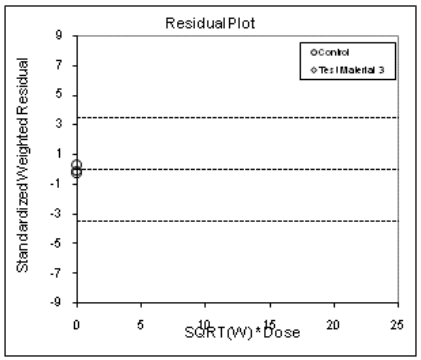
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	5.4	4.4
b1	0.89	0.18
b2	0.43	0.07
b3	0.29	0.05
b4	–	–
Covariance (b1,b2)	0.0013	–
Covariance (b1,b3)	0.0023	–
Covariance (b1,b4)	–	–
Degrees of Freedom	40	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	1117.14	3	372.38
Error	461.72	39	11.84
Total	1578.87	42	37.59

Statistic	Estimate
F	31.454
p	< 0.001
Adjusted R^2	0.6851

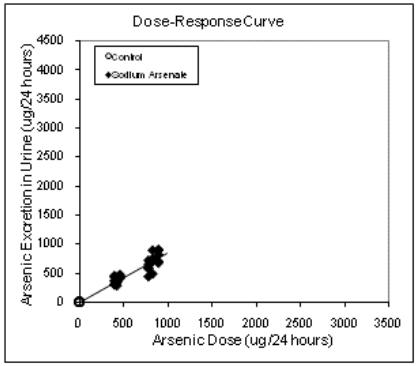
RBA and Uncertainty

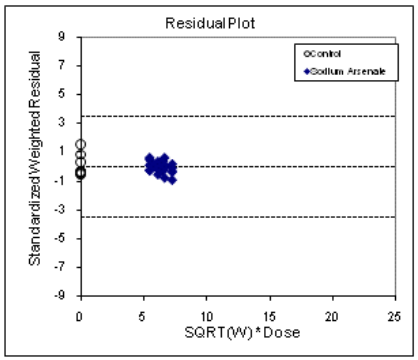
	Test Material 1	Test Material 2	Test Material 3
RBA	0.48	0.33	–
Lower bound[b]	0.31	0.21	–
Upper bound[b]	0.78	0.53	–
Standard Error[b]	0.126**	0.087**	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.
** $g \geq 0.05$, estimate is uncertain

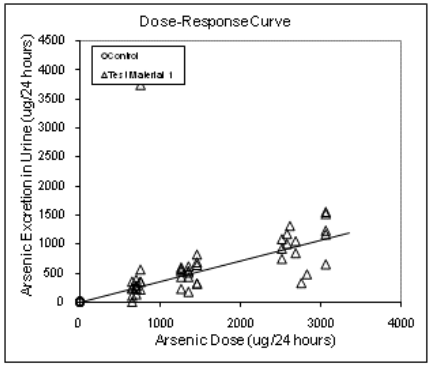
Figure 15d - All Data
Phase III Experiment 5
All Days (Day 8, 11, 14)

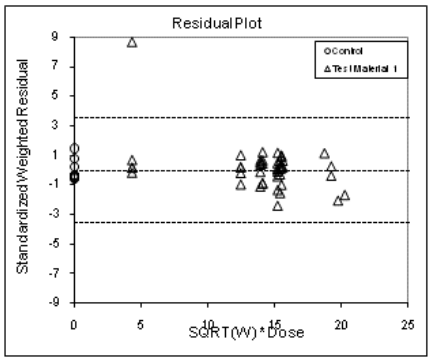
Reference Material
Sodium Arsenate



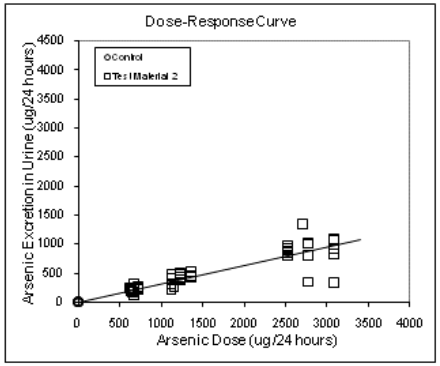


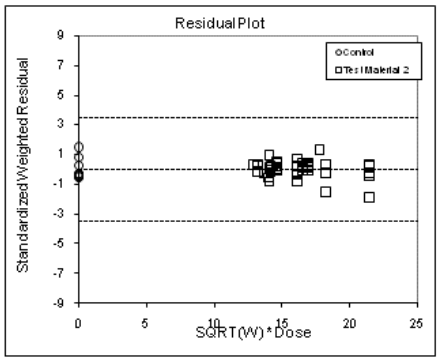
Test Material 1
El Paso TM1



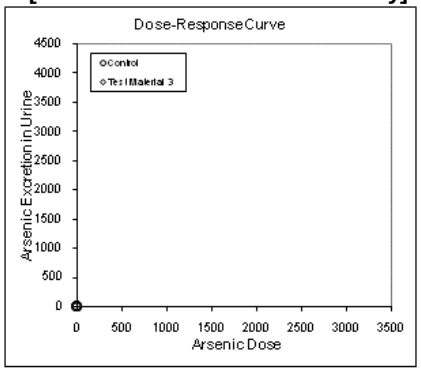


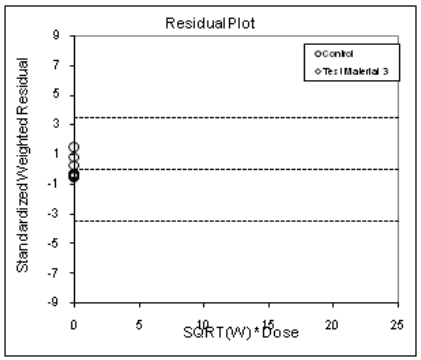
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	6.2	2.0
b1	0.84	0.07
b2	0.36	0.02
b3	0.32	0.02
b4	–	–
Covariance (b1,b2)	0.0030	–
Covariance (b1,b3)	0.0036	–
Covariance (b1,b4)	–	–
Degrees of Freedom	126	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	3186.46	3	1062.15
Error	700.72	125	5.61
Total	3887.17	128	30.37

Statistic	Estimate
F	189.476
p	< 0.001
Adjusted R^2	0.8154

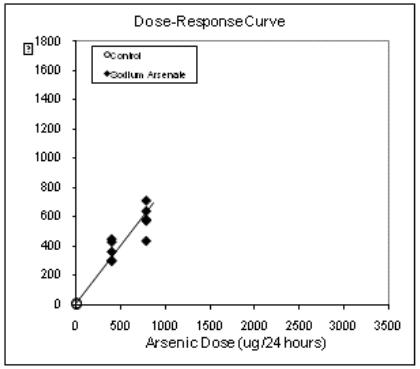
RBA and Uncertainty

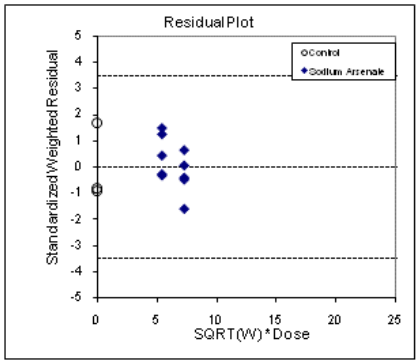
	Test Material 1	Test Material 2	Test Material 3
RBA	0.43	0.38	–
Lower bound[b]	0.36	0.32	–
Upper bound[b]	0.51	0.45	–
Standard Error[b]	0.046	0.040	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

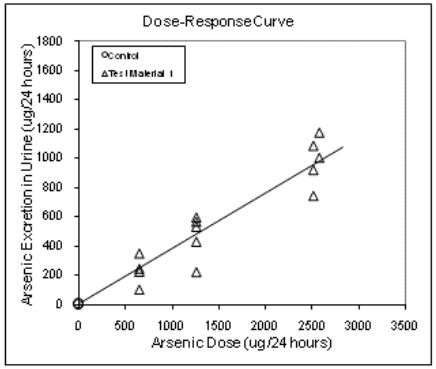
Figure 15a - Outliers Excluded
Phase III Experiment 5
Day 8

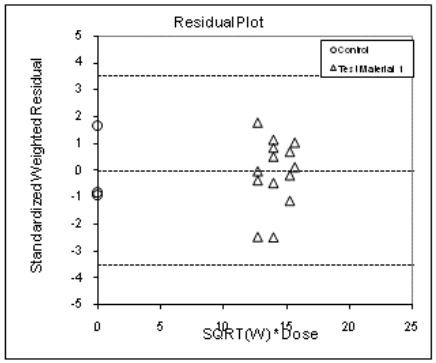
Reference Material
Sodium Arsenate



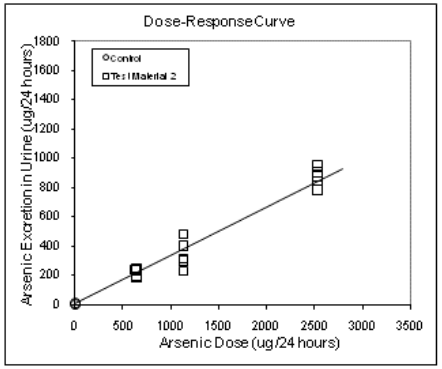


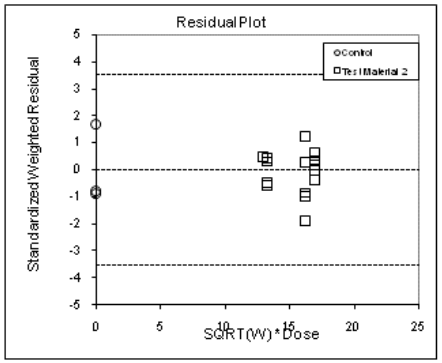
Test Material 1
El Paso TM1



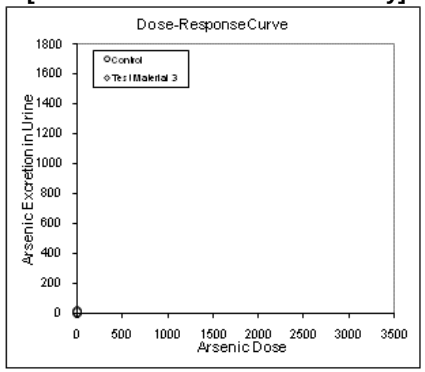


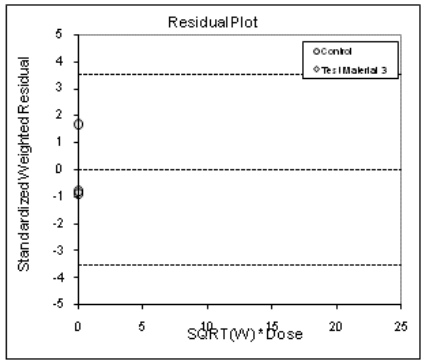
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	6.1	1.6
b1	0.80	0.05
b2	0.38	0.02
b3	0.33	0.02
b4	–	–
Covariance (b1,b2)	0.0026	–
Covariance (b1,b3)	0.0035	–
Covariance (b1,b4)	–	–
Degrees of Freedom	39	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	1059.04	3	353.01
Error	54.53	38	1.43
Total	1113.57	41	27.16

Statistic	Estimate
F	246.020
p	< 0.001
Adjusted R^2	0.9472

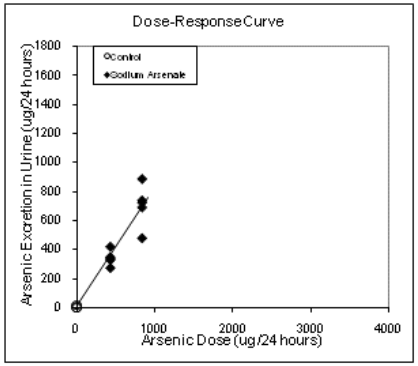
RBA and Uncertainty

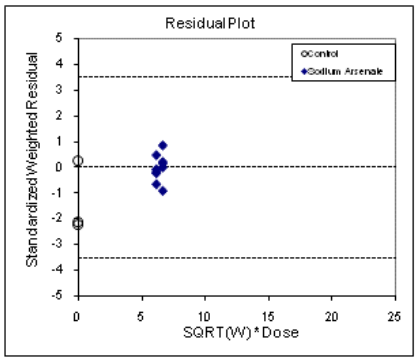
	Test Material 1	Test Material 2	Test Material 3
RBA	0.47	0.42	–
Lower bound[b]	0.41	0.36	–
Upper bound[b]	0.55	0.48	–
Standard Error[b]	0.041	0.036	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

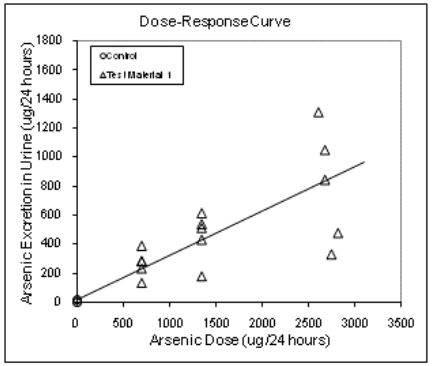
Figure 15b - Outliers Excluded
Phase III Experiment 5
Day 11

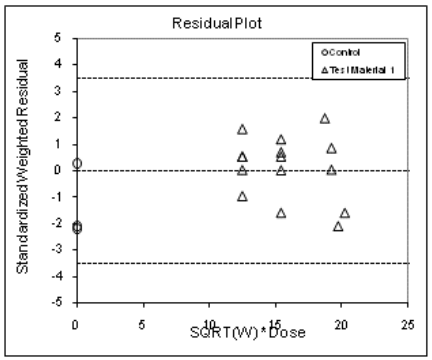
Reference Material
Sodium Arsenate



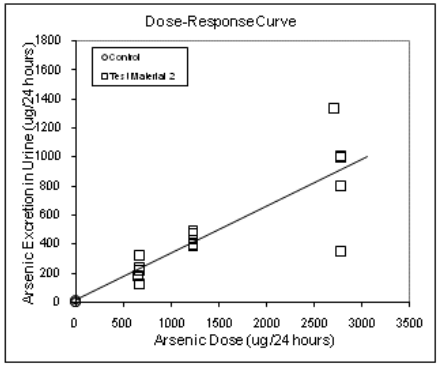


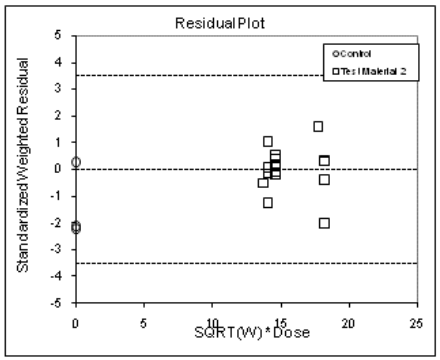
Test Material 1
El Paso TM1



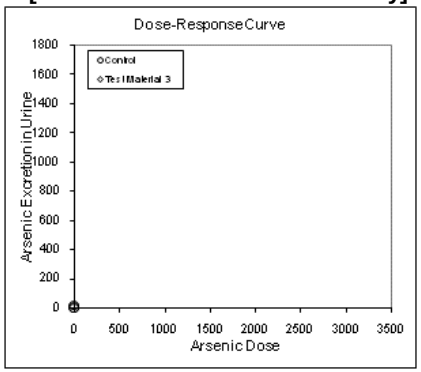


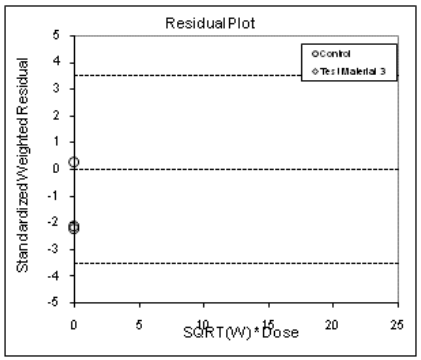
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	15.9	25.4
b1	0.81	0.09
b2	0.31	0.03
b3	0.32	0.03
b4	–	–
Covariance (b1,b2)	0.2048	–
Covariance (b1,b3)	0.2311	–
Covariance (b1,b4)	–	–
Degrees of Freedom	40	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	1016.26	3	338.75
Error	141.14	39	3.62
Total	1157.39	42	27.56

Statistic	Estimate
F	93.608
p	< 0.001
Adjusted R^2	0.8687

RBA and Uncertainty

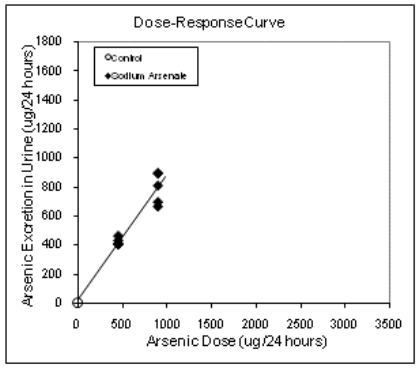
	Test Material 1	Test Material 2	Test Material 3
RBA	0.38	0.40	–
Lower bound[b]	0.30	0.32	–
Upper bound[b]	0.48	0.50	–
Standard Error[b]	0.052	0.054	–

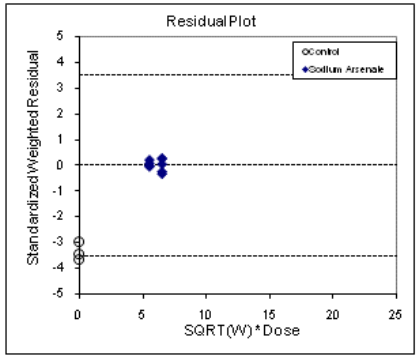
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 15c - Outliers Excluded

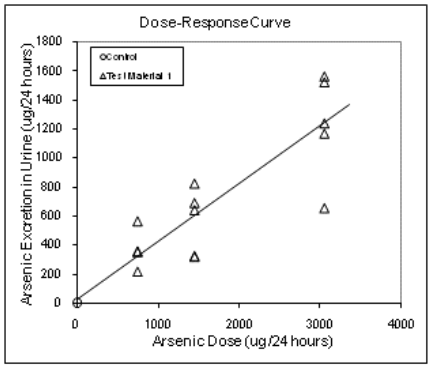
Phase III Experiment 5
Day 14

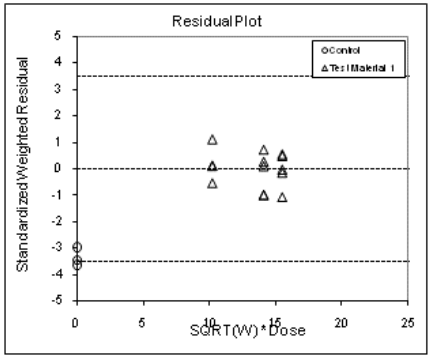
Reference Material
Sodium Arsenate



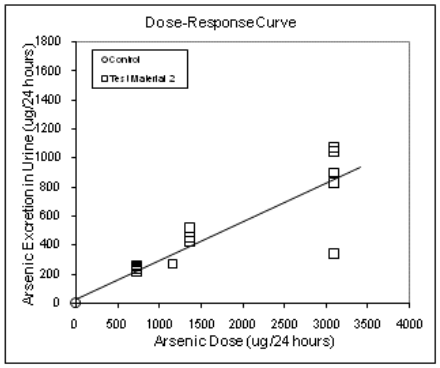


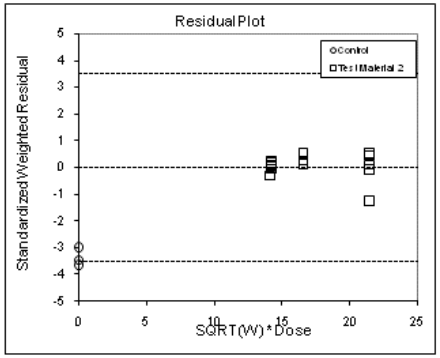
Test Material 1
El Paso TM1



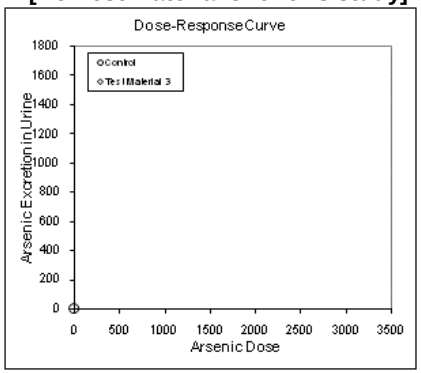


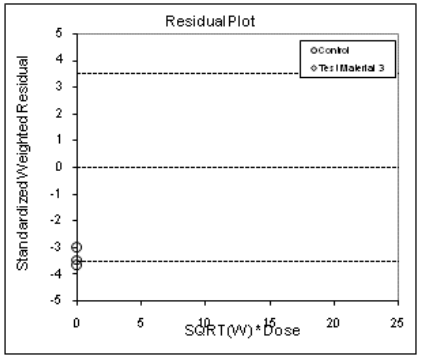
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	26.2	27.7
b1	0.86	0.10
b2	0.40	0.03
b3	0.27	0.02
b4	–	–
Covariance (b1,b2)	0.1755	–
Covariance (b1,b3)	0.2137	–
Covariance (b1,b4)	–	–
Degrees of Freedom	39	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	1276.40	3	425.47
Error	338.40	38	8.91
Total	1614.81	41	39.39

Statistic	Estimate
F	47.777
p	< 0.001
Adjusted R^2	0.7739

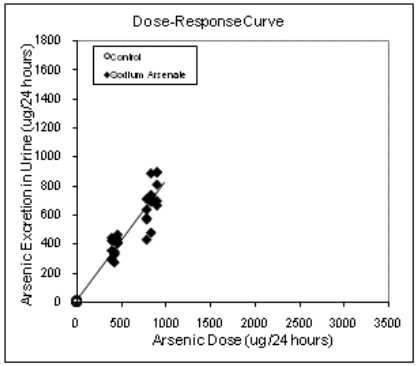
RBA and Uncertainty

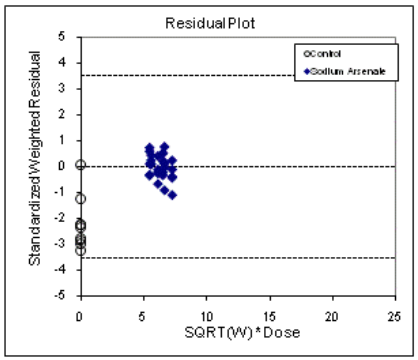
	Test Material 1	Test Material 2	Test Material 3
RBA	0.47	0.31	–
Lower bound[b]	0.38	0.25	–
Upper bound[b]	0.59	0.40	–
Standard Error[b]	0.061	0.041	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

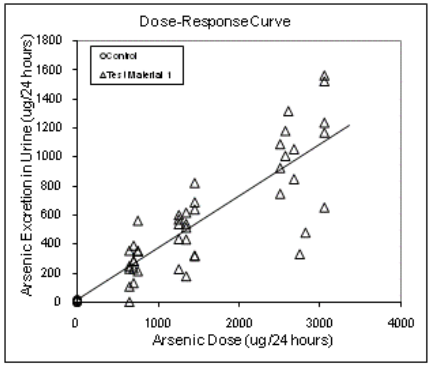
Figure 15d - Outliers Excluded
Phase III Experiment 5
All Days (Day 8, 11, 14)

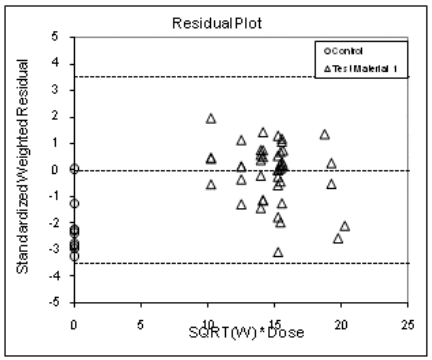
Reference Material
Sodium Arsenate



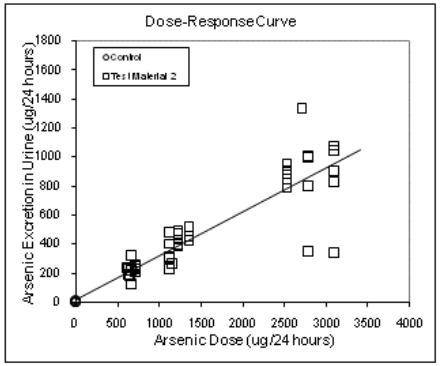


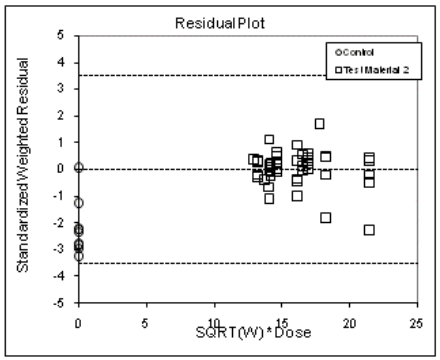
Test Material 1
El Paso TM1



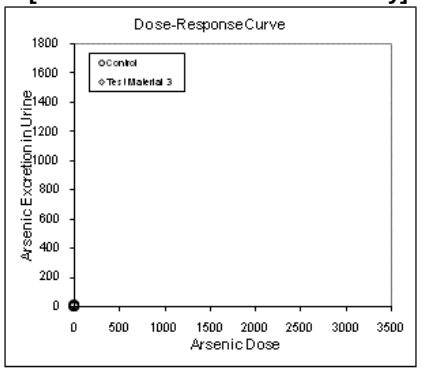


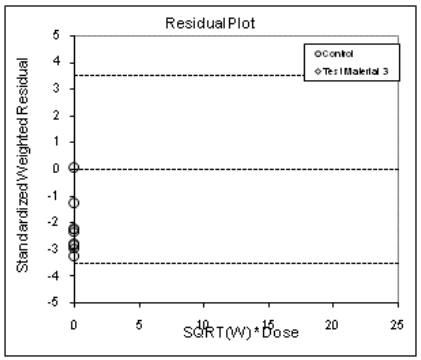
Test Material 2
El Paso TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	17.2	20.4
b1	0.82	0.05
b2	0.36	0.02
b3	0.30	0.02
b4	–	–
Covariance (b1,b2)	0.3096	–
Covariance (b1,b3)	0.3539	–
Covariance (b1,b4)	–	–
Degrees of Freedom	252	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	3302.05	3	1100.68
Error	476.57	124	3.84
Total	3778.62	127	29.75

Statistic	Estimate
F	286.390
p	< 0.001
Adjusted R^2	0.8708

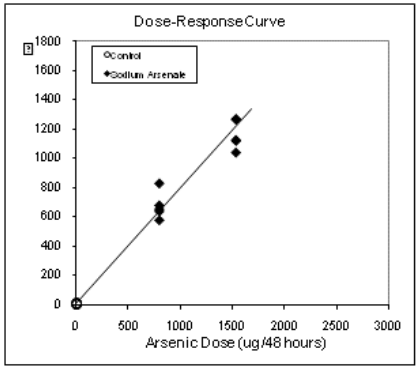
RBA and Uncertainty

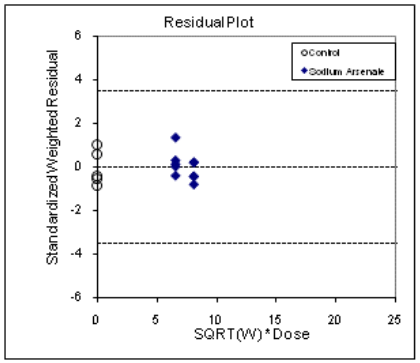
	Test Material 1	Test Material 2	Test Material 3
RBA	0.44	0.37	–
Lower bound[b]	0.39	0.33	–
Upper bound[b]	0.49	0.42	–
Standard Error[b]	0.031	0.025	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

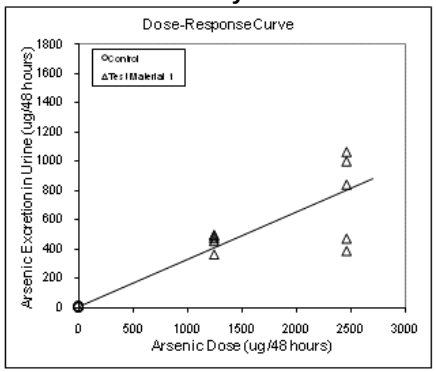
Figure 16a - All Data
Phase III Experiment 6
Days 8/9

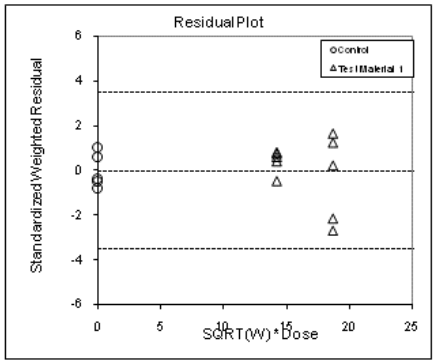
Reference Material
Sodium Arsenate



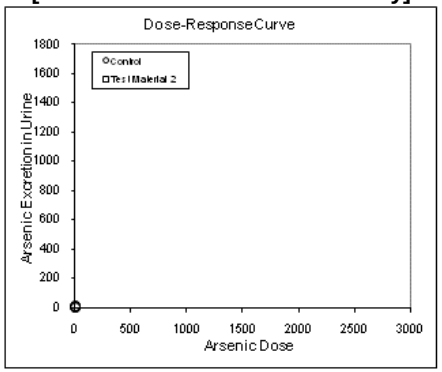


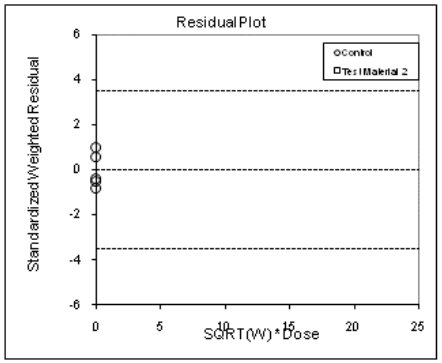
Test Material 1
ACC Utility Pole Soil



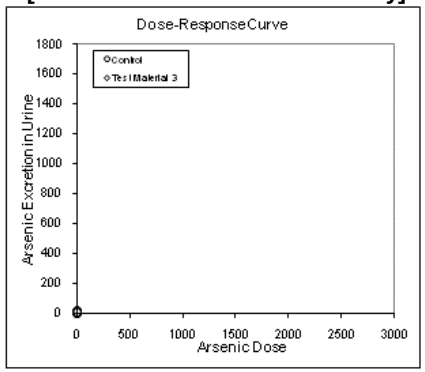


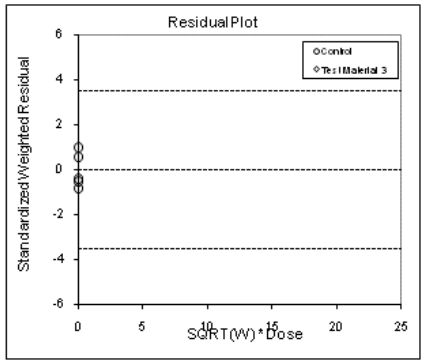
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.6	1.8
b1	0.79	0.05
b2	0.32	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0014	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	23	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	628.34	2	314.17
Error	33.30	22	1.51
Total	661.64	24	27.57

Statistic	Estimate
F	207.580
p	< 0.001
Adjusted R^2	0.9451

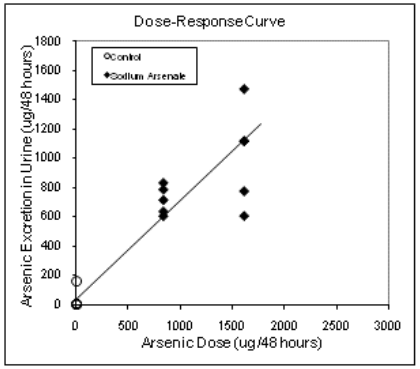
RBA and Uncertainty

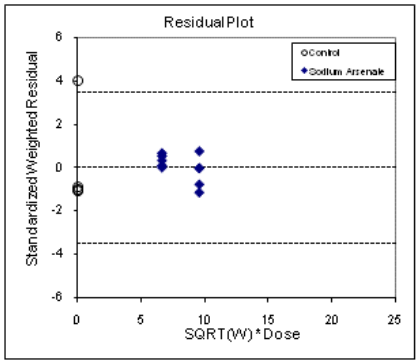
	Test Material 1	Test Material 2	Test Material 3
RBA	0.41	–	–
Lower bound[b]	0.35	–	–
Upper bound[b]	0.49	–	–
Standard Error[b]	0.040	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

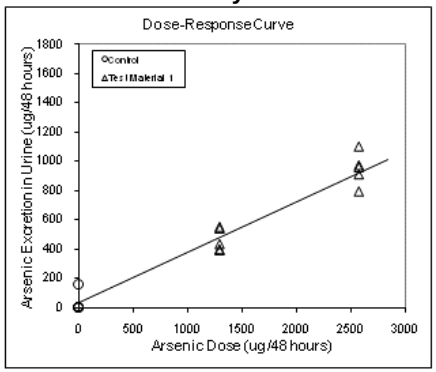
Figure 16b - All Data
Phase III Experiment 6
Days 10/11

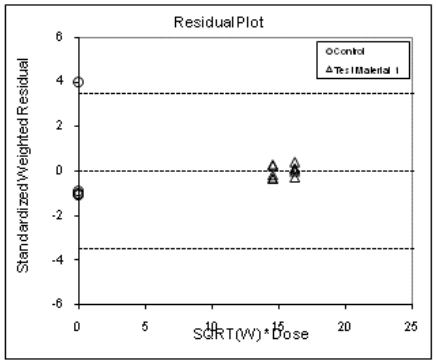
Reference Material
Sodium Arsenate



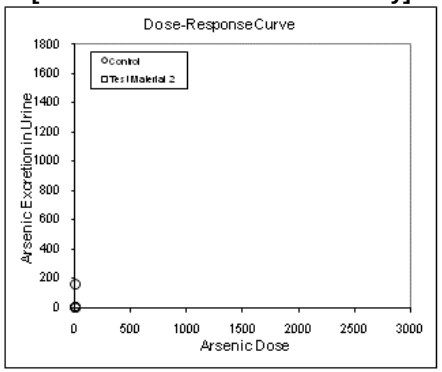


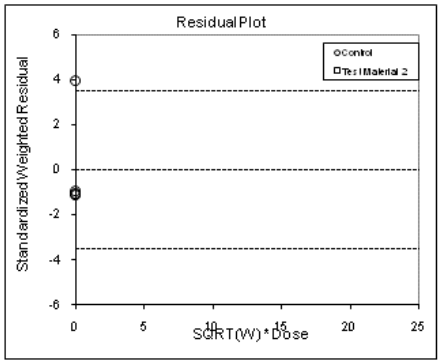
Test Material 1
ACC Utility Pole Soil



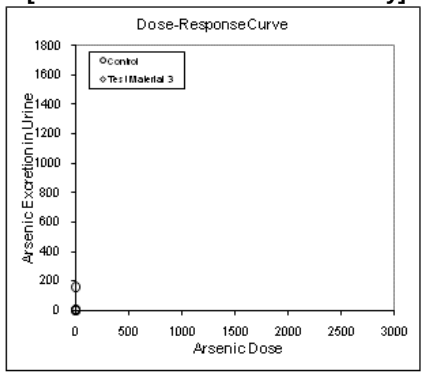


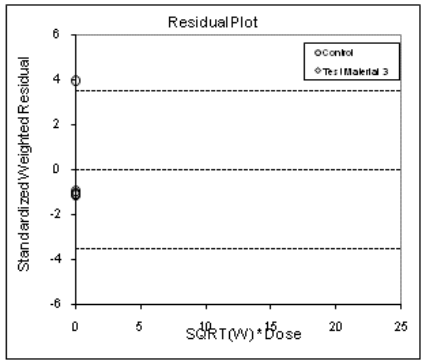
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	39.1	14.7
b1	0.68	0.11
b2	0.34	0.06
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0150	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	23	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	567.39	2	283.69
Error	178.85	22	8.13
Total	746.24	24	31.09

Statistic	Estimate
F	34.897
p	< 0.001
Adjusted R^2	0.7385

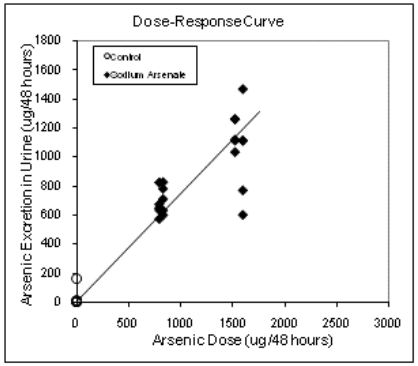
RBA and Uncertainty

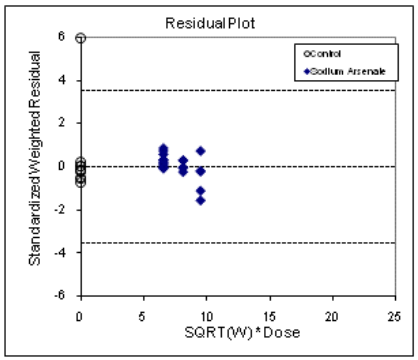
	Test Material 1	Test Material 2	Test Material 3
RBA	0.51	–	–
Lower bound[b]	0.33	–	–
Upper bound[b]	0.77	–	–
Standard Error[b]	0.120**	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.
** $g \geq 0.05$, estimate is uncertain

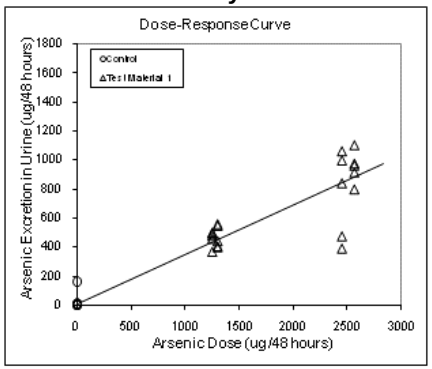
Figure 16c - All Data
Phase III Experiment 6
All Days (Days 8/9, 10/11)

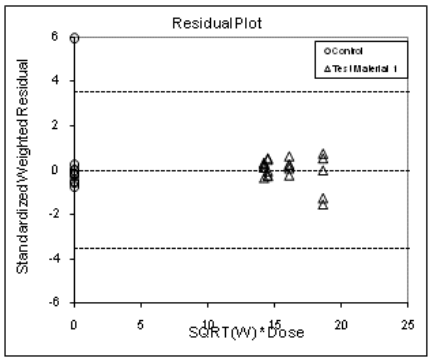
Reference Material
Sodium Arsenate



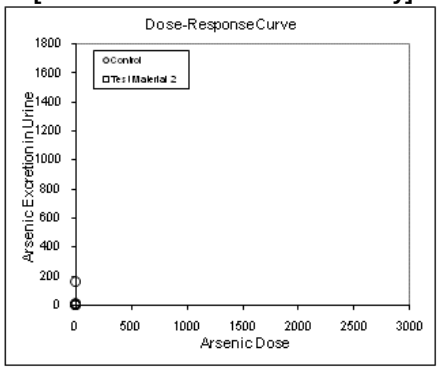


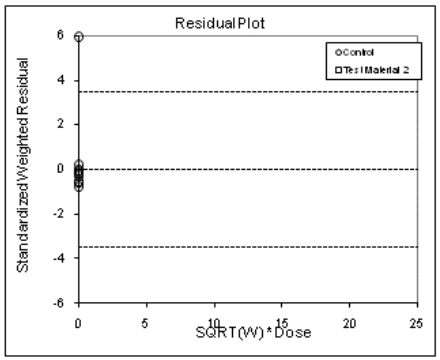
Test Material 1
ACC Utility Pole Soil



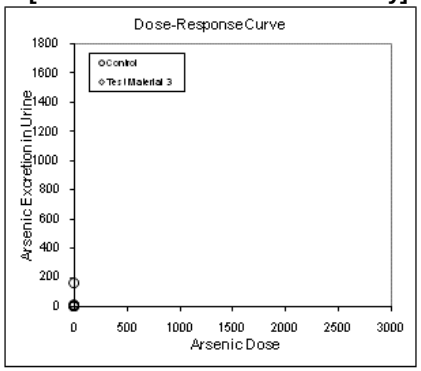


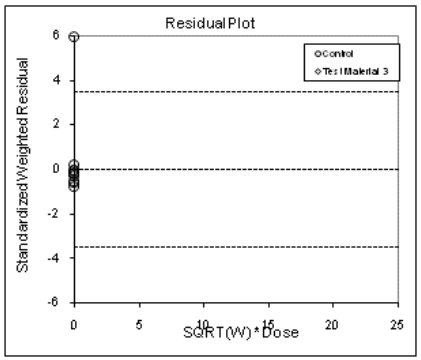
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	11.0	3.3
b1	0.74	0.07
b2	0.34	0.03
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0024	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	48	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	1247.74	2	623.87
Error	248.51	47	5.29
Total	1496.26	49	30.54

Statistic	Estimate
F	117.990
p	< 0.001
Adjusted R^2	0.8268

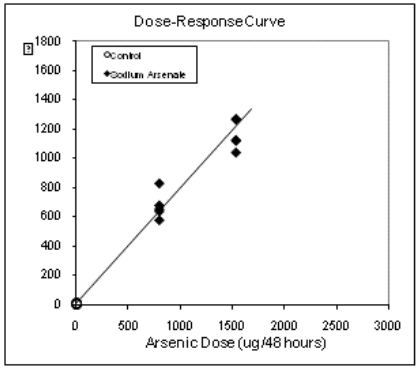
RBA and Uncertainty

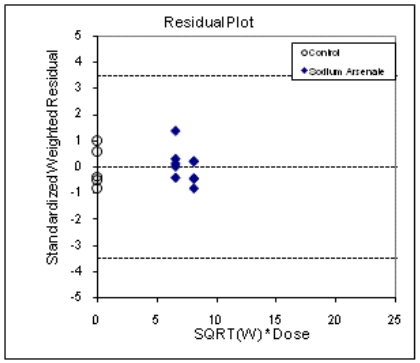
	Test Material 1	Test Material 2	Test Material 3
RBA	0.46	–	–
Lower bound[b]	0.37	–	–
Upper bound[b]	0.57	–	–
Standard Error[b]	0.060	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

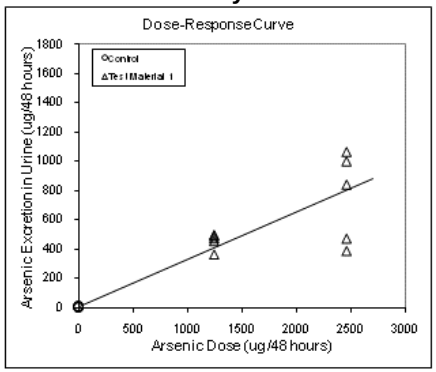
Figure 16a - Outliers Excluded
Phase III Experiment 6
Days 8/9

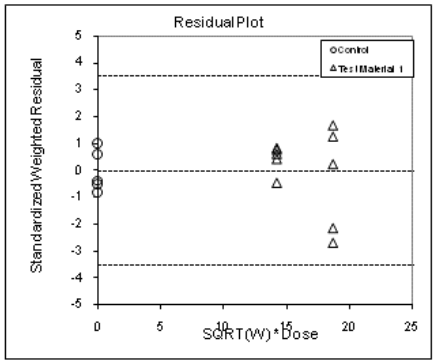
Reference Material
Sodium Arsenate



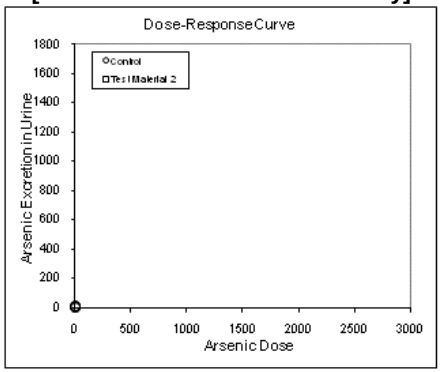


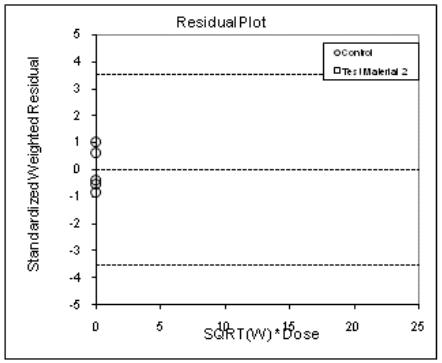
Test Material 1
ACC Utility Pole Soil



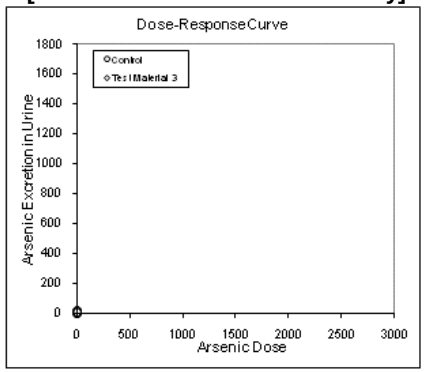


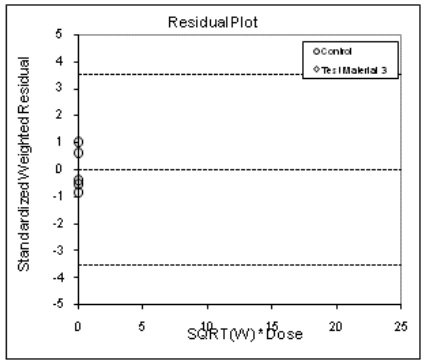
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.6	1.8
b1	0.79	0.05
b2	0.32	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0014	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	23	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	628.34	2	314.17
Error	33.30	22	1.51
Total	661.64	24	27.57

Statistic	Estimate
F	207.580
p	< 0.001
Adjusted R^2	0.9451

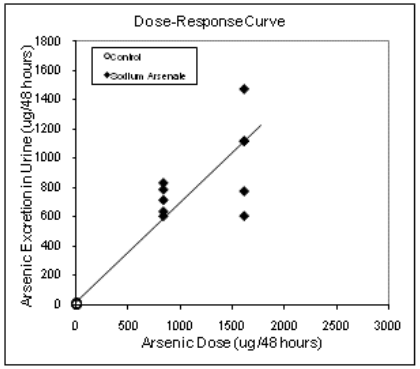
RBA and Uncertainty

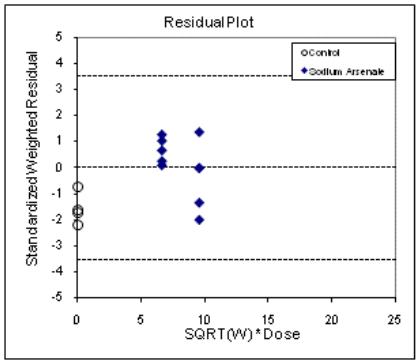
	Test Material 1	Test Material 2	Test Material 3
RBA	0.41	–	–
Lower bound[b]	0.35	–	–
Upper bound[b]	0.49	–	–
Standard Error[b]	0.040	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

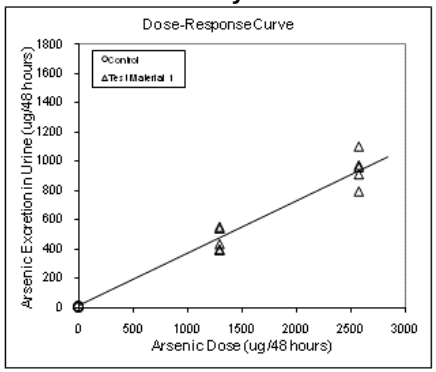
Figure 16b - Outliers Excluded
Phase III Experiment 6
Days 10/11

Reference Material
Sodium Arsenate

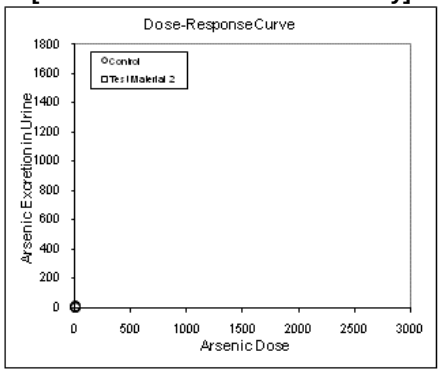


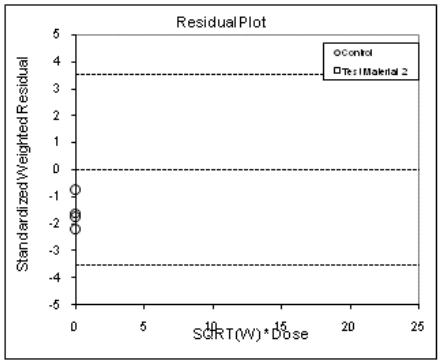


Test Material 1
ACC Utility Pole Soil

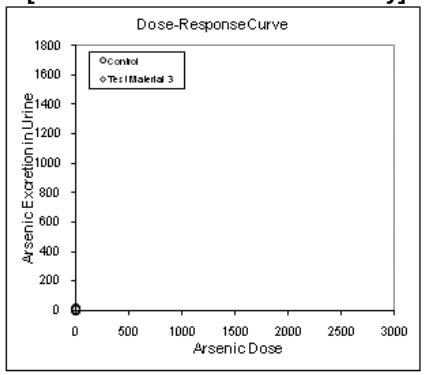


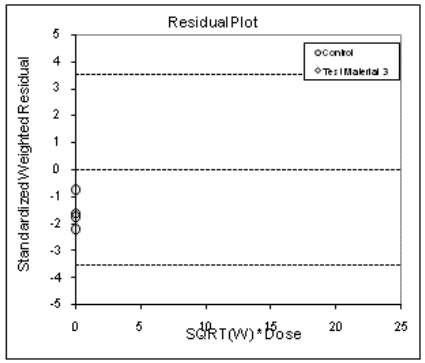
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	14.2	25.2
b1	0.69	0.05
b2	0.36	0.03
b3	–	–
b4	–	–
Covariance (b1,b2)	0.1812	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	22	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	644.57	2	322.28
Error	55.84	21	2.66
Total	700.41	23	30.45

Statistic	Estimate
F	121.206
p	< 0.001
Adjusted R^2	0.9127

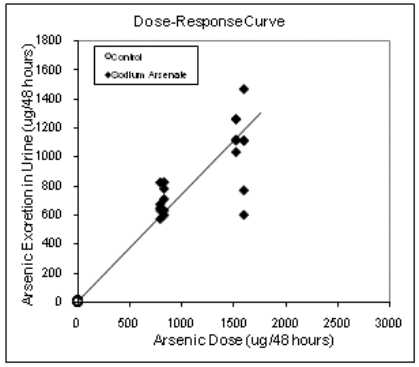
RBA and Uncertainty

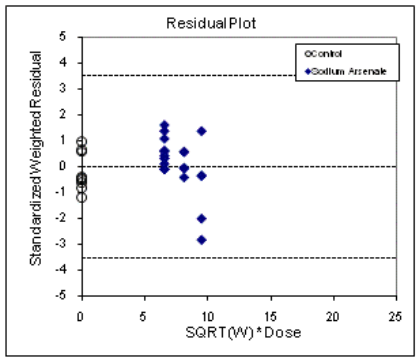
	Test Material 1	Test Material 2	Test Material 3
RBA	0.52	–	–
Lower bound[b]	0.44	–	–
Upper bound[b]	0.62	–	–
Standard Error[b]	0.050	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

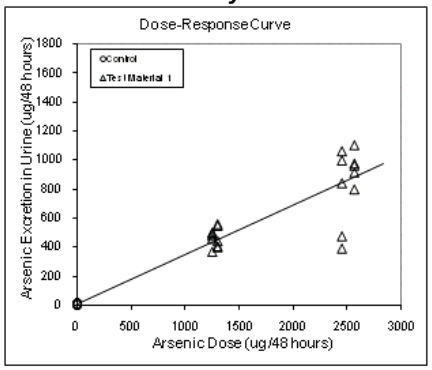
Figure 16c - Outliers Excluded
Phase III Experiment 6
All Days (Days 8/9, 10/11)

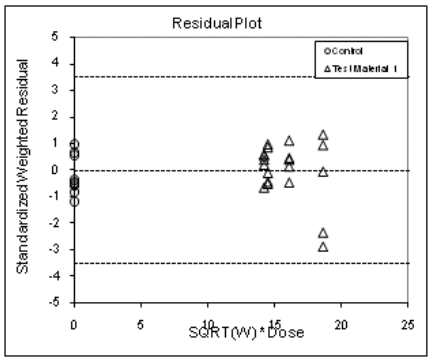
Reference Material
Sodium Arsenate



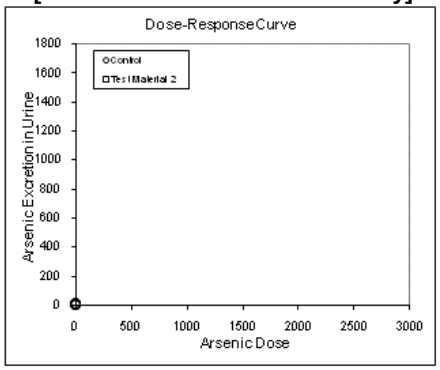


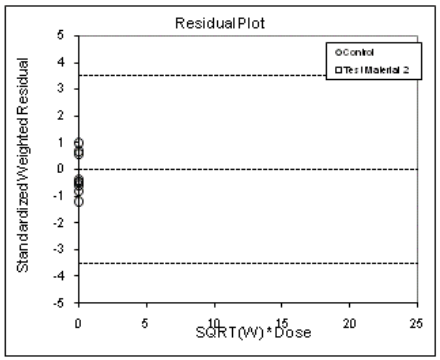
Test Material 1
ACC Utility Pole Soil



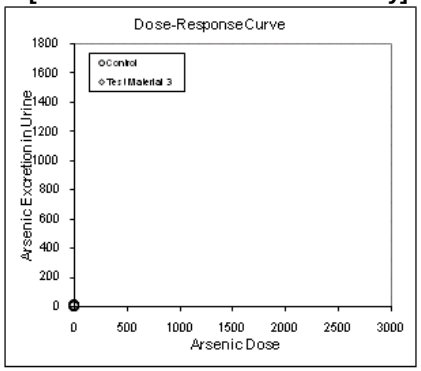


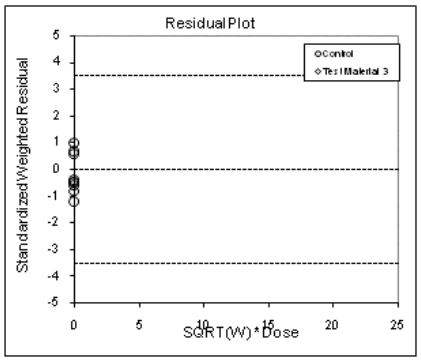
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.6	1.9
b1	0.74	0.03
b2	0.34	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0026	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	47	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	1255.28	2	627.64
Error	71.67	46	1.56
Total	1326.95	48	27.64

Statistic	Estimate
F	402.849
p	< 0.001
Adjusted R^2	0.9436

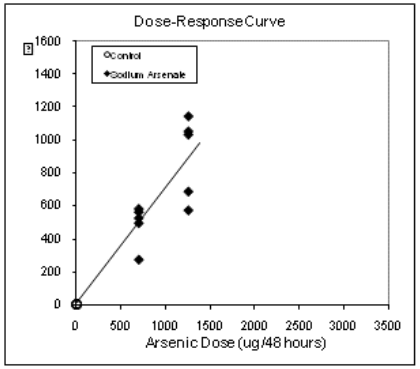
RBA and Uncertainty

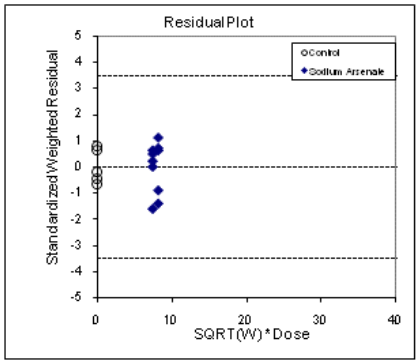
	Test Material 1	Test Material 2	Test Material 3
RBA	0.47	–	–
Lower bound[b]	0.42	–	–
Upper bound[b]	0.52	–	–
Standard Error[b]	0.032	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

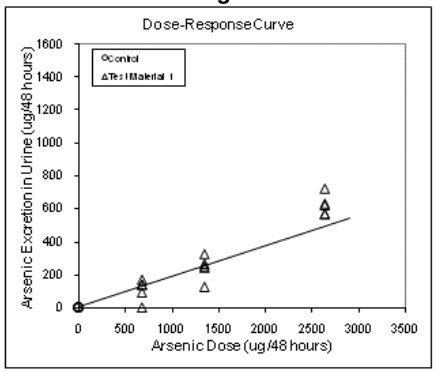
Figure 17a - All Data
Phase III Experiment 7
Days 6/7

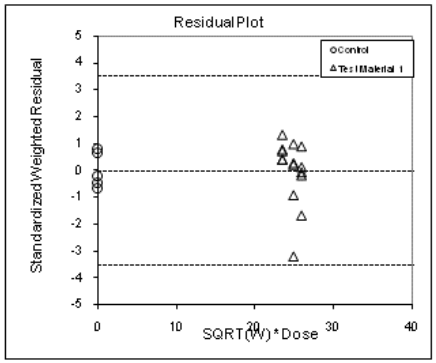
Reference Material
Sodium Arsenate



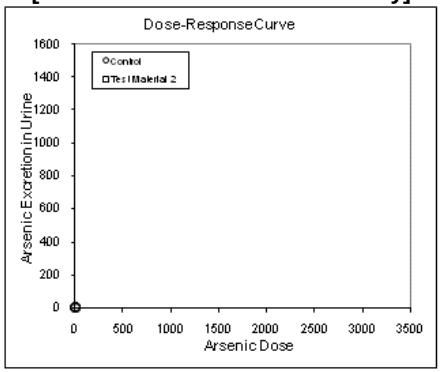


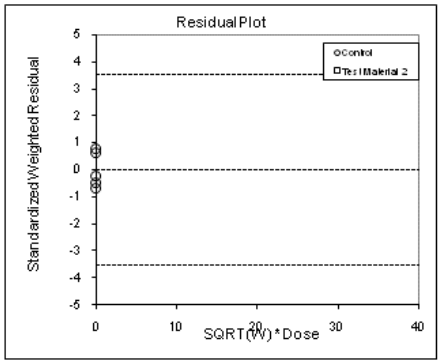
Test Material 1
ACC Dislodgeable Arsenic



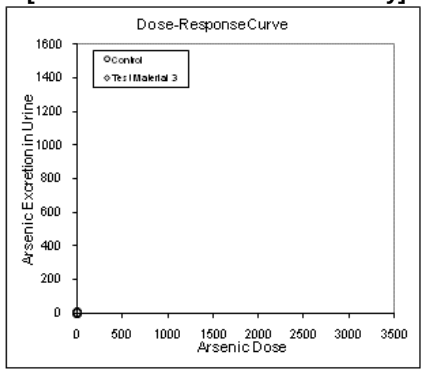


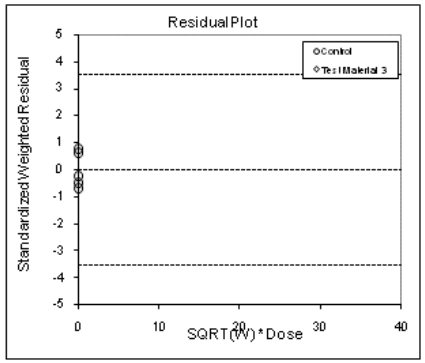
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	4.7	1.4
b1	0.71	0.06
b2	0.19	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0020	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	627.38	2	313.69
Error	63.95	27	2.37
Total	691.33	29	23.84

Statistic	Estimate
F	132.449
p	< 0.001
Adjusted R^2	0.9007

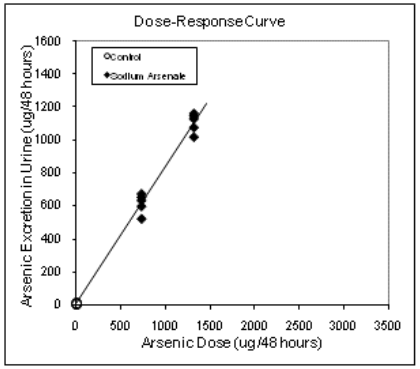
RBA and Uncertainty

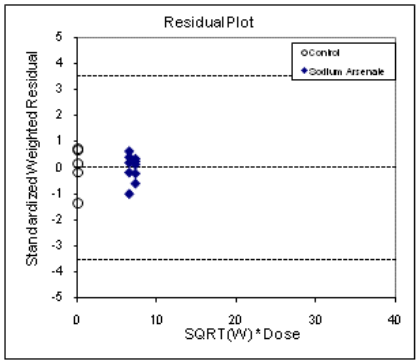
	Test Material 1	Test Material 2	Test Material 3
RBA	0.26	–	–
Lower bound[b]	0.21	–	–
Upper bound[b]	0.33	–	–
Standard Error[b]	0.032	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

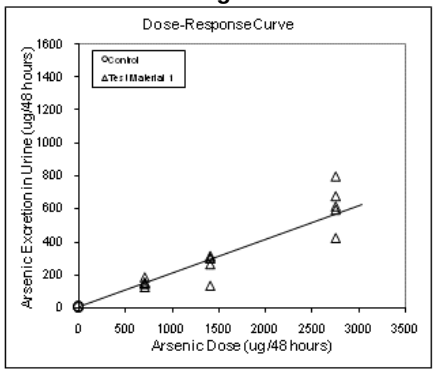
Figure 17b - All Data
Phase III Experiment 7
Days 8/9

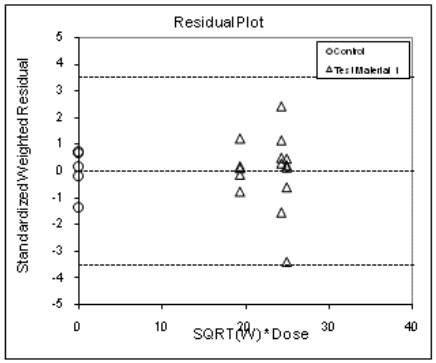
Reference Material
Sodium Arsenate



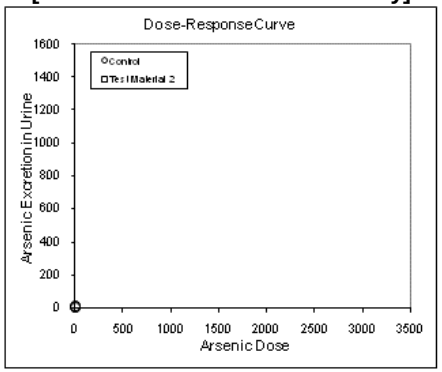


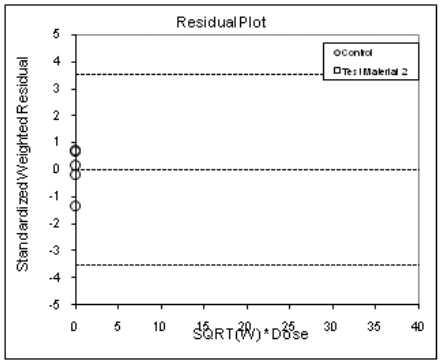
Test Material 1
ACC Dislodgeable Arsenic



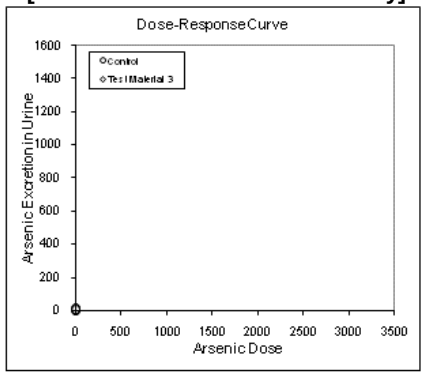


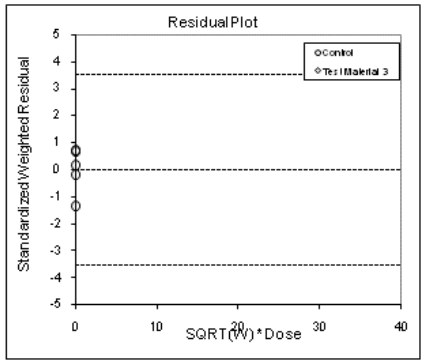
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.8	1.3
b1	0.84	0.04
b2	0.21	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0035	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	661.38	2	330.69
Error	20.35	27	0.75
Total	681.73	29	23.51

Statistic	Estimate
F	438.695
p	< 0.001
Adjusted R^2	0.9679

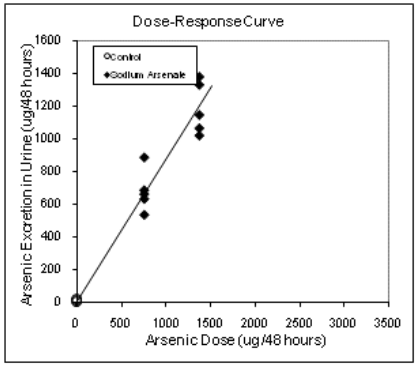
RBA and Uncertainty

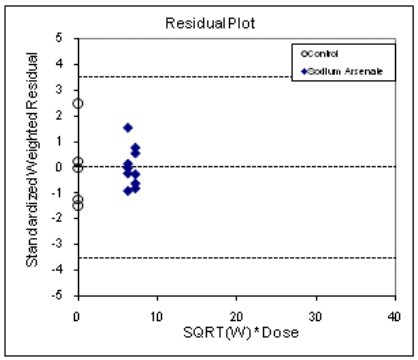
	Test Material 1	Test Material 2	Test Material 3
RBA	0.25	–	–
Lower bound[b]	0.22	–	–
Upper bound[b]	0.28	–	–
Standard Error[b]	0.017	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

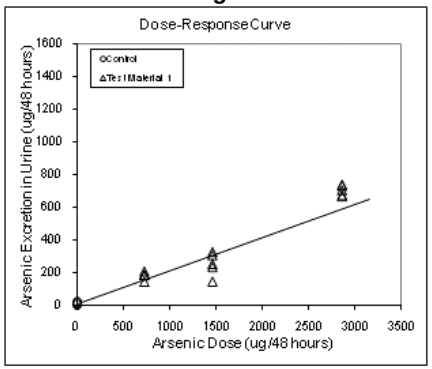
Figure 17c - All Data
Phase III Experiment 7
Days 10/11

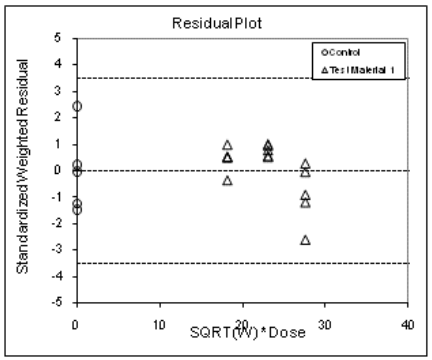
Reference Material
Sodium Arsenate



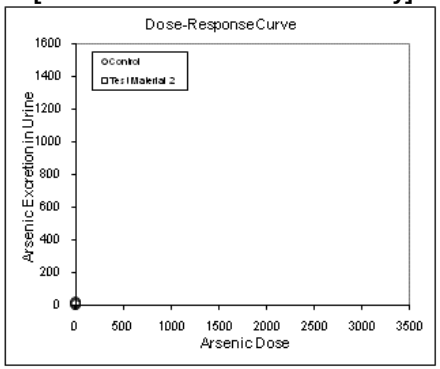


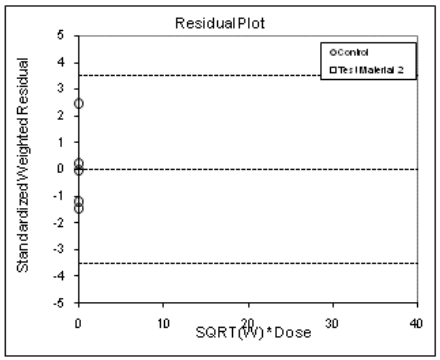
Test Material 1
ACC Dislodgeable Arsenic



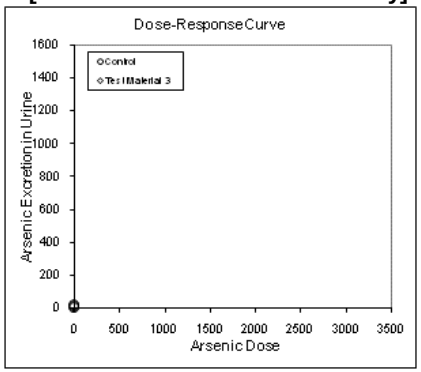


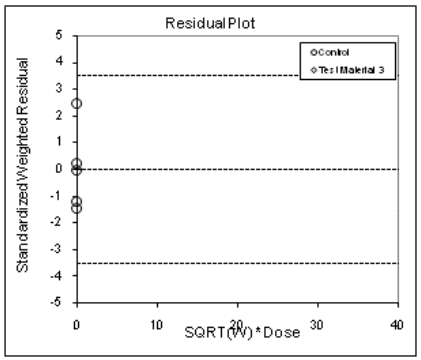
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.9	1.9
b1	0.87	0.06
b2	0.20	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0032	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	672.35	2	336.18
Error	41.24	27	1.53
Total	713.59	29	24.61

Statistic	Estimate
F	220.081
p	< 0.001
Adjusted R^2	0.9379

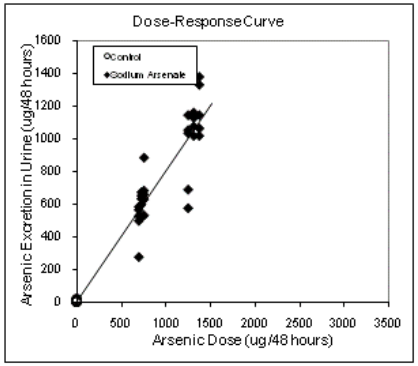
RBA and Uncertainty

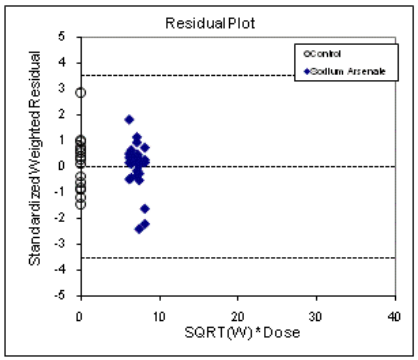
	Test Material 1	Test Material 2	Test Material 3
RBA	0.23	–	–
Lower bound[b]	0.20	–	–
Upper bound[b]	0.28	–	–
Standard Error[b]	0.022	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

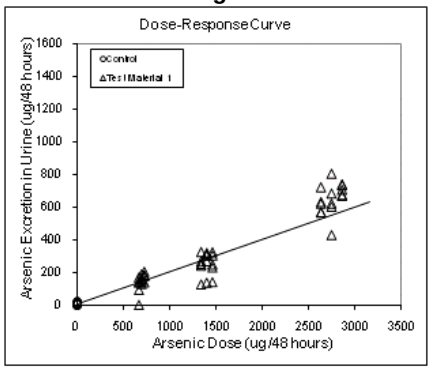
Figure 17d - All Data
Phase III Experiment 7
All Days (Days 6/7, 8/9, 10/11)

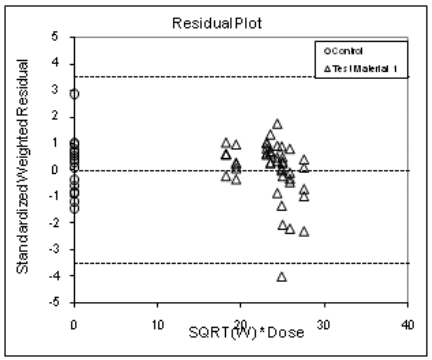
Reference Material
Sodium Arsenate



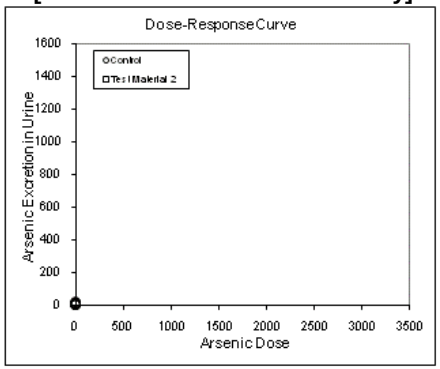


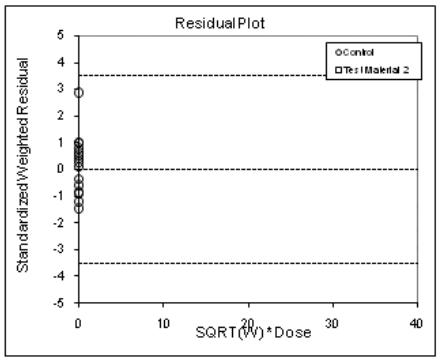
Test Material 1
ACC Dislodgeable Arsenic



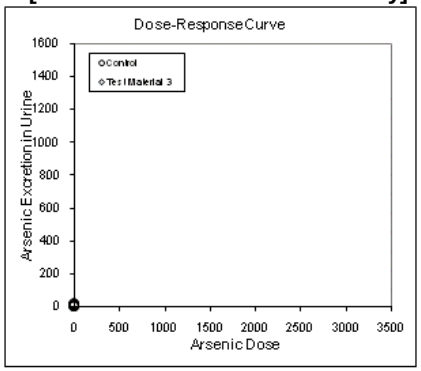


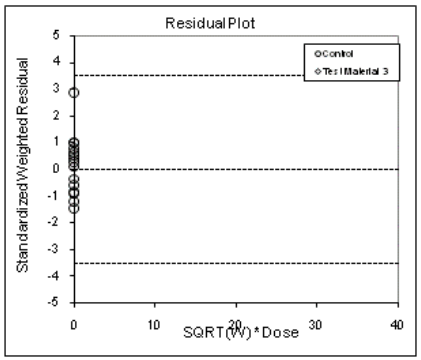
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	6.4	0.9
b1	0.79	0.03
b2	0.20	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0025	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	88	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	1960.26	2	980.13
Error	144.97	87	1.67
Total	2105.23	89	23.65

Statistic	Estimate
F	588.196
p	< 0.001
Adjusted R^2	0.9296

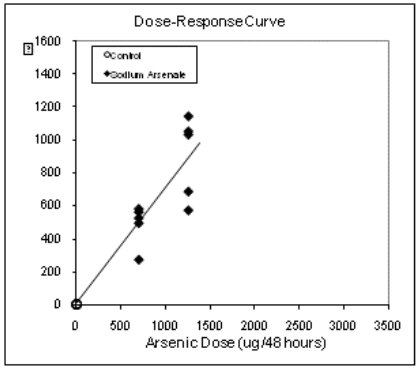
RBA and Uncertainty

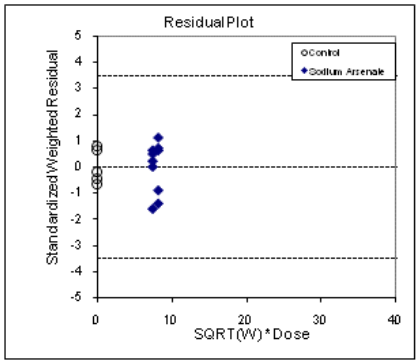
	Test Material 1	Test Material 2	Test Material 3
RBA	0.25	–	–
Lower bound[b]	0.23	–	–
Upper bound[b]	0.28	–	–
Standard Error[b]	0.015	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

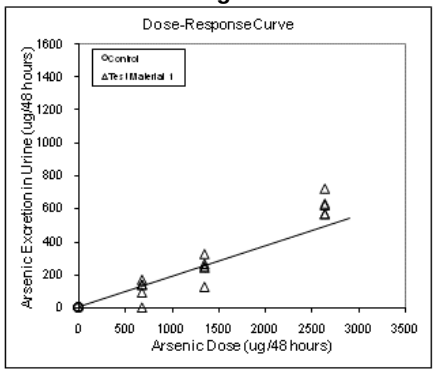
Figure 17a - Outliers Excluded
Phase III Experiment 7
Days 6/7

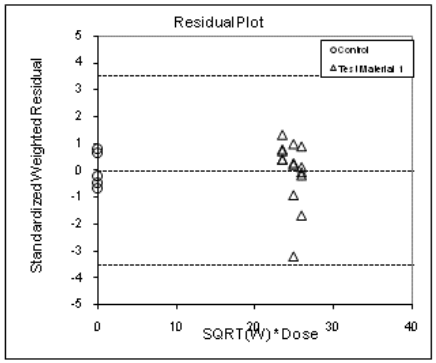
Reference Material
Sodium Arsenate



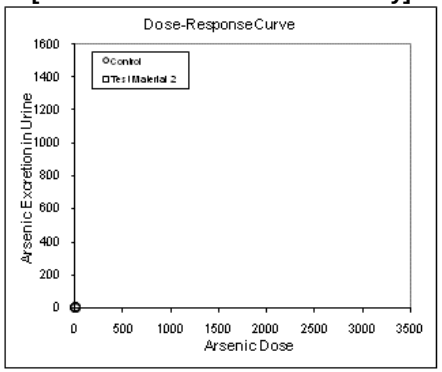


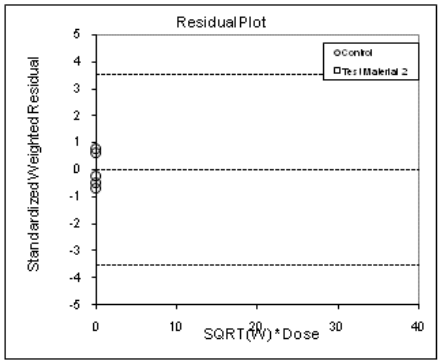
Test Material 1
ACC Dislodgeable Arsenic



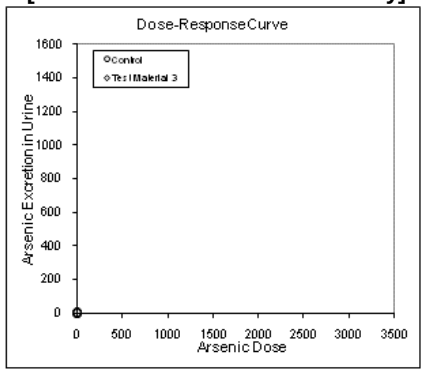


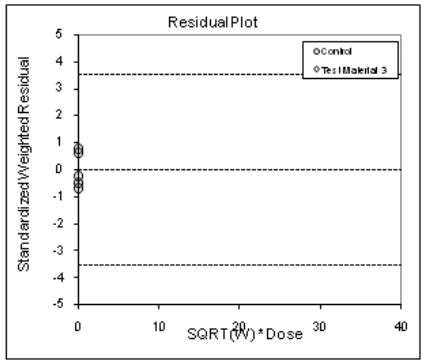
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	4.7	1.4
b1	0.71	0.06
b2	0.19	0.02
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0020	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	627.38	2	313.69
Error	63.95	27	2.37
Total	691.33	29	23.84

Statistic	Estimate
F	132.449
p	< 0.001
Adjusted R^2	0.9007

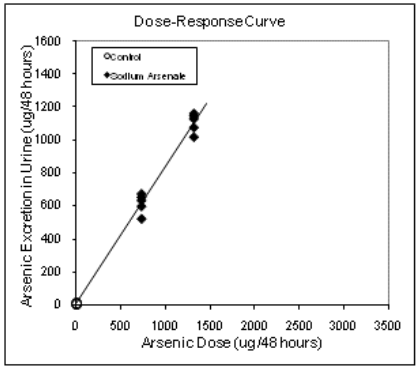
RBA and Uncertainty

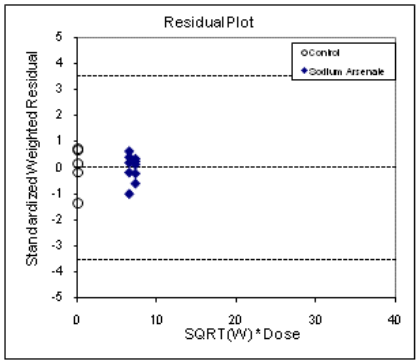
	Test Material 1	Test Material 2	Test Material 3
RBA	0.26	–	–
Lower bound[b]	0.21	–	–
Upper bound[b]	0.33	–	–
Standard Error[b]	0.032	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

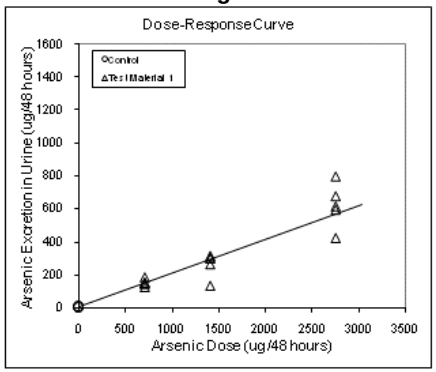
Figure 17b - Outliers Excluded
Phase III Experiment 7
Days 8/9

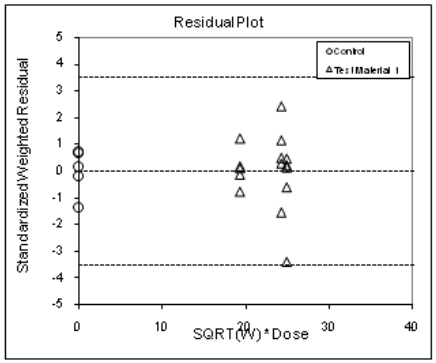
Reference Material
Sodium Arsenate



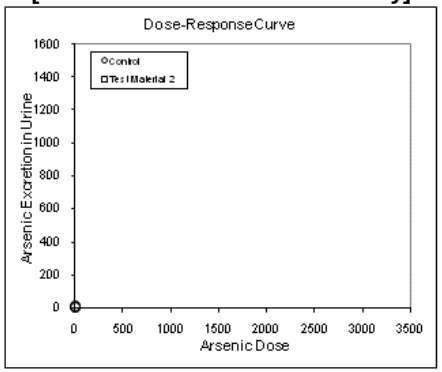


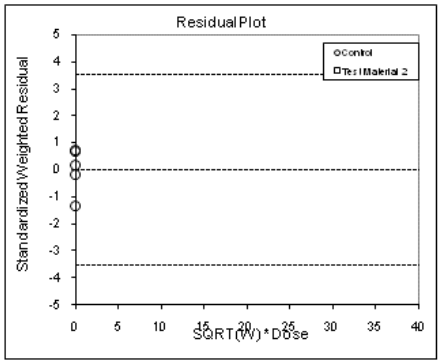
Test Material 1
ACC Dislodgeable Arsenic



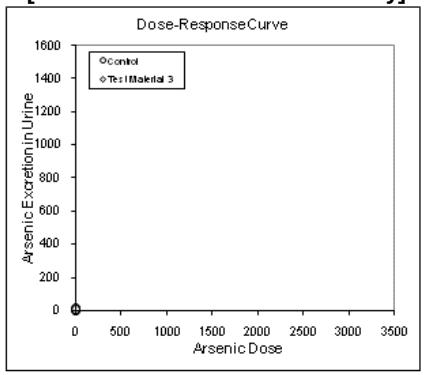


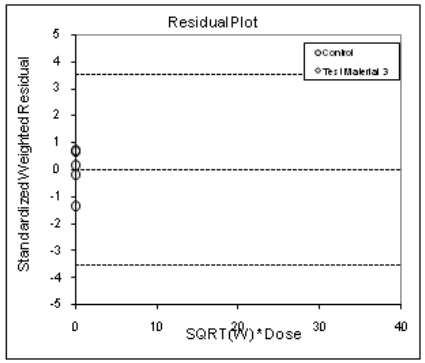
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.8	1.3
b1	0.84	0.04
b2	0.21	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0035	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	661.38	2	330.69
Error	20.35	27	0.75
Total	681.73	29	23.51

Statistic	Estimate
F	438.695
p	< 0.001
Adjusted R^2	0.9679

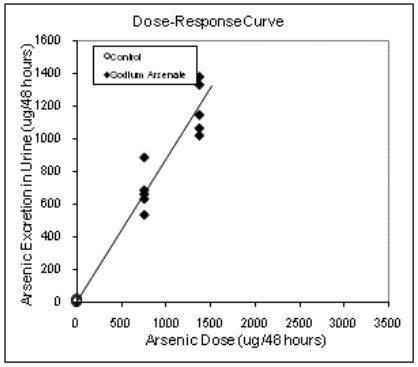
RBA and Uncertainty

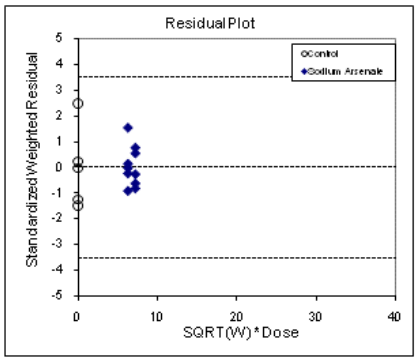
	Test Material 1	Test Material 2	Test Material 3
RBA	0.25	–	–
Lower bound[b]	0.22	–	–
Upper bound[b]	0.28	–	–
Standard Error[b]	0.017	–	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

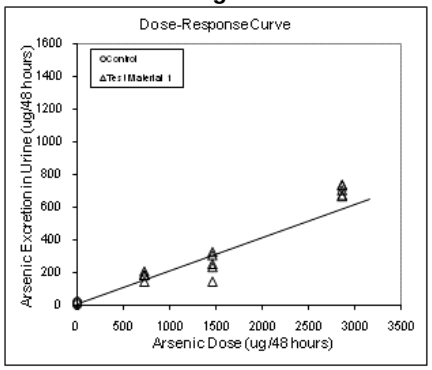
Figure 17c - Outliers Excluded
Phase III Experiment 7
Days 10/11

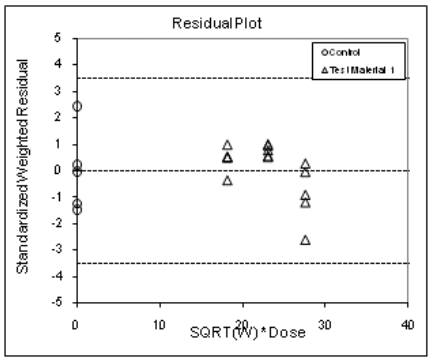
Reference Material
Sodium Arsenate



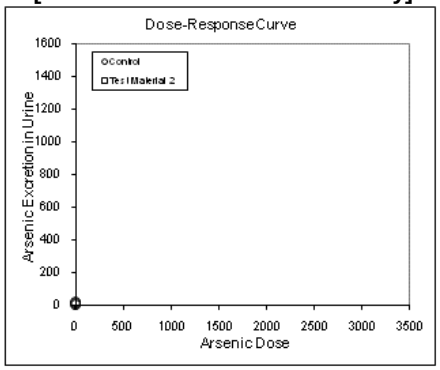


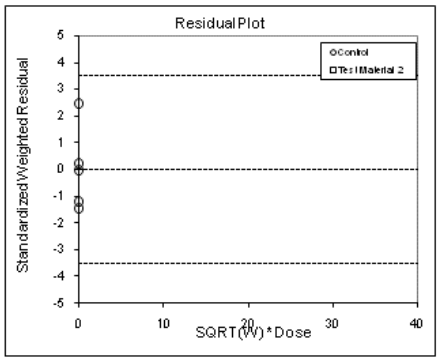
Test Material 1
ACC Dislodgeable Arsenic



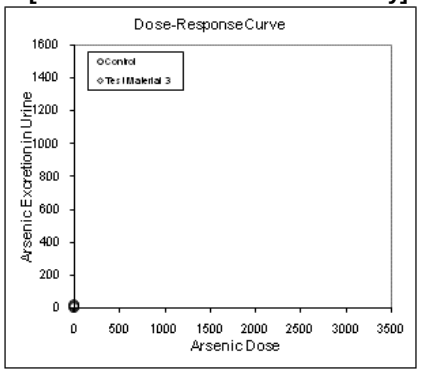


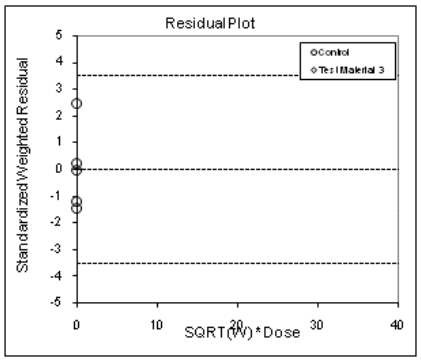
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	8.9	1.9
b1	0.87	0.06
b2	0.20	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0032	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	28	–

[a] y = a + b1*x1 + b2*x2

ANOVA

Source	SSE	DF	MSE
Fit	672.35	2	336.18
Error	41.24	27	1.53
Total	713.59	29	24.61

Statistic	Estimate
F	220.081
p	< 0.001
Adjusted R^2	0.9379

RBA and Uncertainty

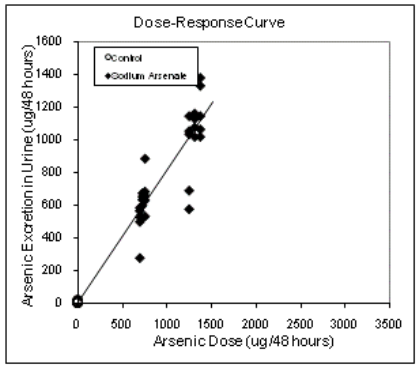
	Test Material 1	Test Material 2	Test Material 3
RBA	0.23	–	–
Lower bound[b]	0.20	–	–
Upper bound[b]	0.28	–	–
Standard Error[b]	0.022	–	–

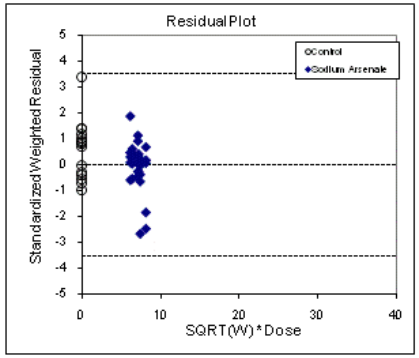
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 17d - Outliers Excluded

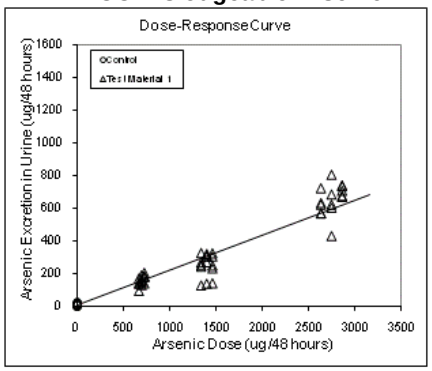
Phase III Experiment 7
All Days (Days 6/7, 8/9, 10/11)

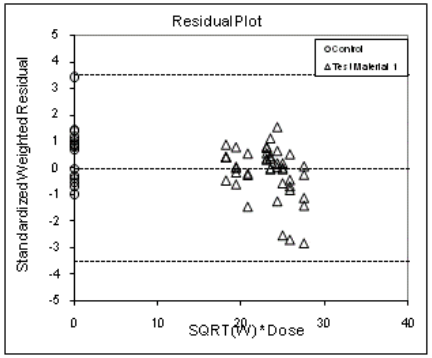
Reference Material
Sodium Arsenate



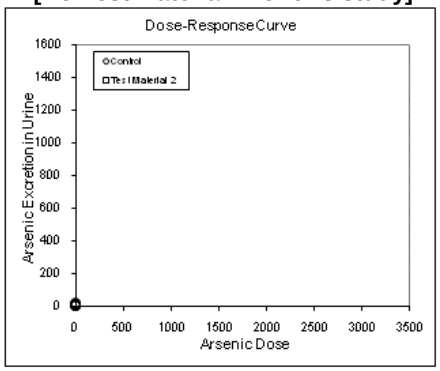


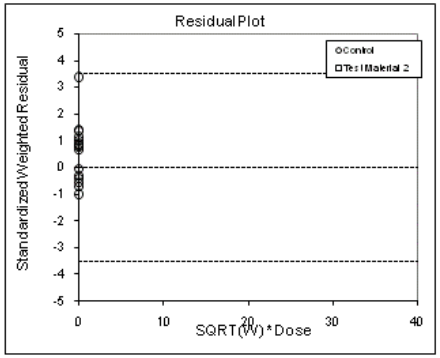
Test Material 1
ACC Dislodgeable Arsenic



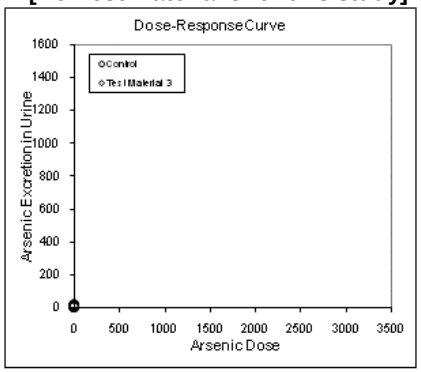


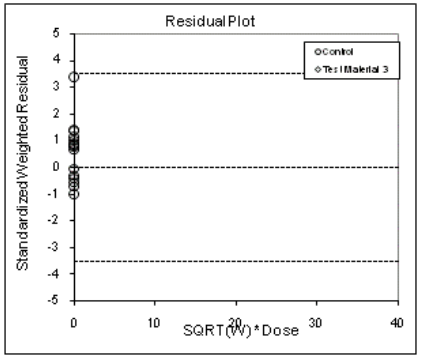
[No Test Material 2 for this study]





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	5.0	5.1
b1	0.81	0.02
b2	0.21	0.01
b3	–	–
b4	–	–
Covariance (b1,b2)	0.0969	–
Covariance (b1,b3)	–	–
Covariance (b1,b4)	–	–
Degrees of Freedom	177	–

[a] $y = a + b1*x1 + b2*x2$

ANOVA

Source	SSE	DF	MSE
Fit	2102.99	2	1051.49
Error	123.53	86	1.44
Total	2226.52	88	25.30

Statistic	Estimate
F	732.011
p	< 0.001
Adjusted R^2	0.9432

RBA and Uncertainty

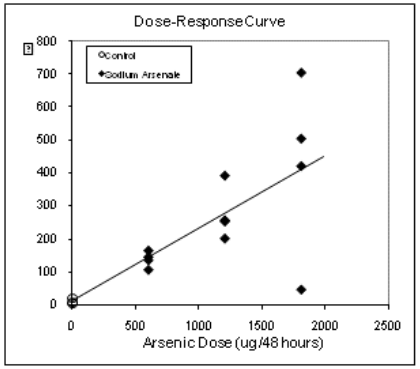
	Test Material 1	Test Material 2	Test Material 3
RBA	0.26	–	–
Lower bound[b]	0.25	–	–
Upper bound[b]	0.28	–	–
Standard Error[b]	0.011	–	–

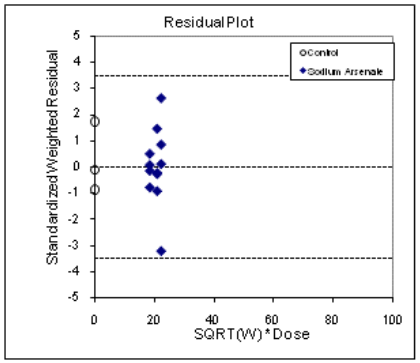
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 18a - All Data
Phase III Experiment 3 Digestion Method 1

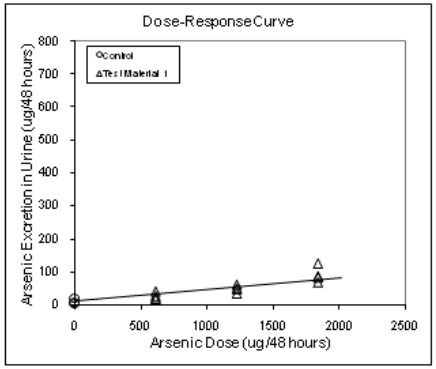
Days 6/7

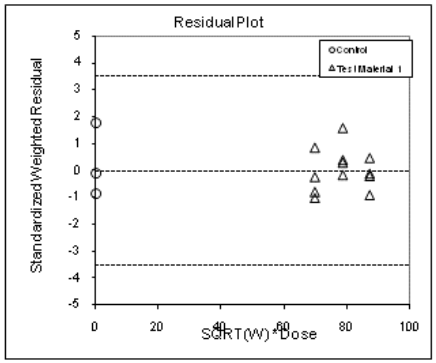
Reference Material
Sodium Arsenate



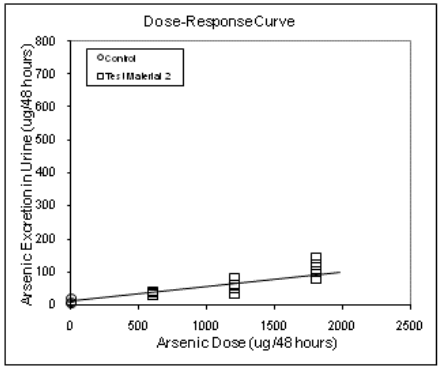


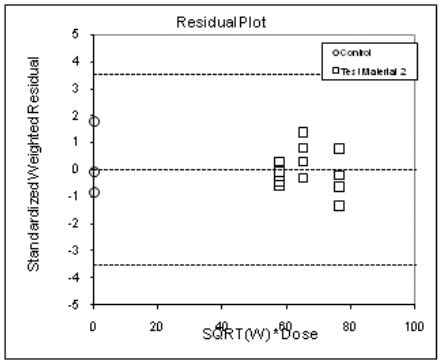
Test Material 1
Butte TM1



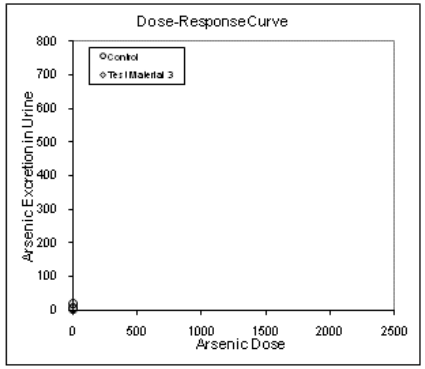


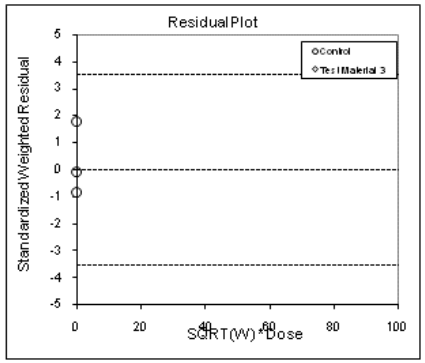
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	9.8	3.3
b1	0.22	0.02
b2	0.04	0.01
b3	0.05	0.01
b4	–	–
Covariance (b1,b2)	0.0767	–
Covariance (b1,b3)	0.0679	–
Covariance (b1,b4)	–	–
Degrees of Freedom	36	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	340.24	3	113.41
Error	73.45	35	2.10
Total	413.68	38	10.89

Statistic	Estimate
F	54.046
p	< 0.001
Adjusted R^2	0.8072

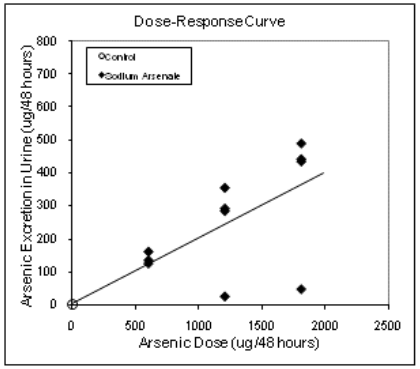
RBA and Uncertainty

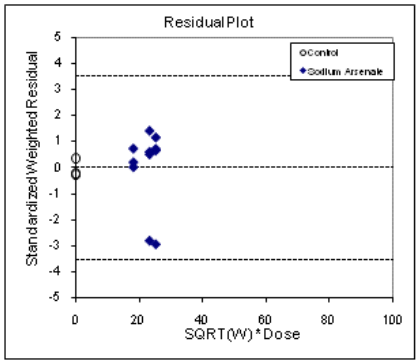
	Test Material 1	Test Material 2	Test Material 3
RBA	0.16	0.20	–
Lower bound[b]	0.11	0.15	–
Upper bound[b]	0.21	0.27	–
Standard Error[b]	0.030	0.035	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

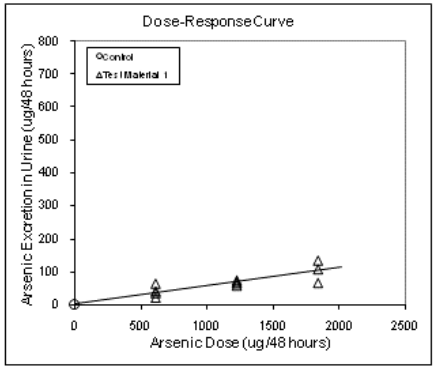
Figure 18b - All Data
Phase III Experiment 3 Digestion Method 1
Days 8/9

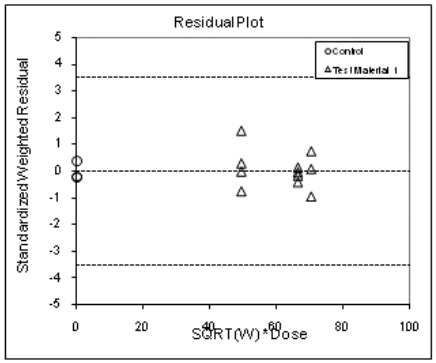
Reference Material
Sodium Arsenate



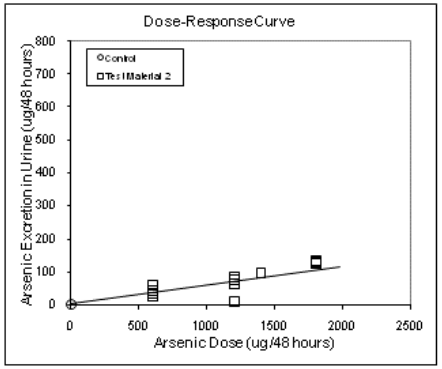


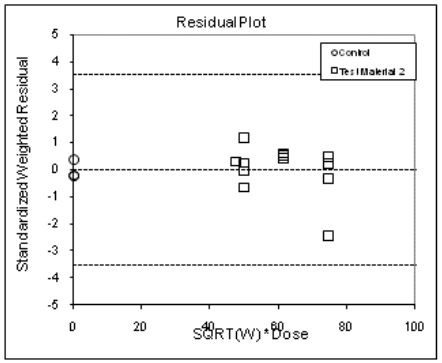
Test Material 1
Butte TM1



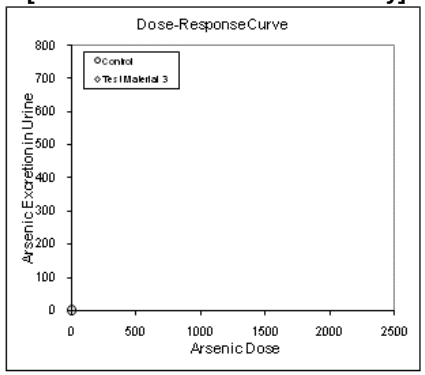


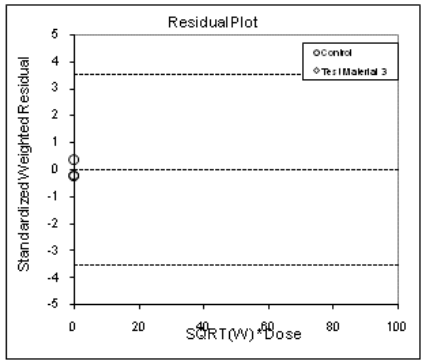
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.9	1.3
b1	0.20	0.02
b2	0.06	0.01
b3	0.06	0.01
b4	–	–
Covariance (b1,b2)	0.0074	–
Covariance (b1,b3)	0.0080	–
Covariance (b1,b4)	–	–
Degrees of Freedom	34	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	496.43	3	165.48
Error	84.95	33	2.57
Total	581.38	36	16.15

Statistic	Estimate
F	64.284
p	< 0.001
Adjusted R^2	0.8406

RBA and Uncertainty

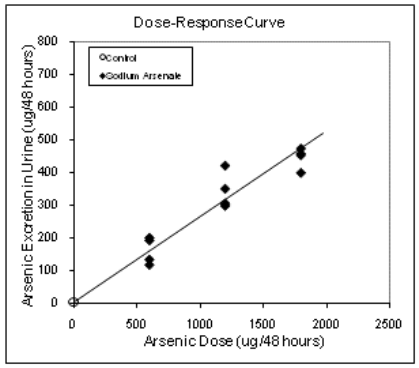
	Test Material 1	Test Material 2	Test Material 3
RBA	0.28	0.28	–
Lower bound[b]	0.21	0.21	–
Upper bound[b]	0.37	0.37	–
Standard Error[b]	0.049	0.048	–

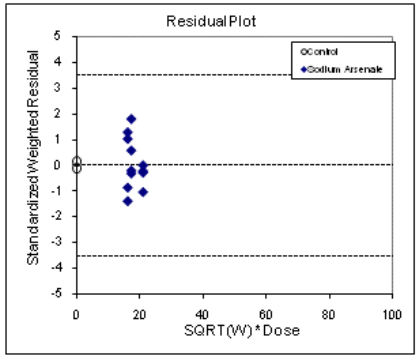
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 18c - All Data

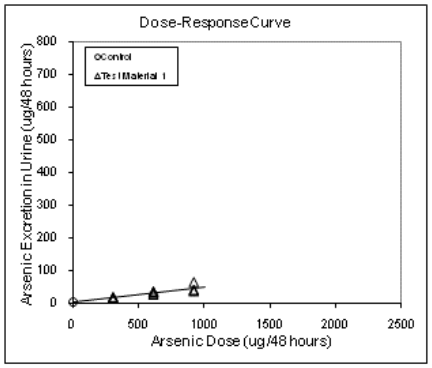
Phase III Experiment 3 Digestion Method 1
Days 10/11

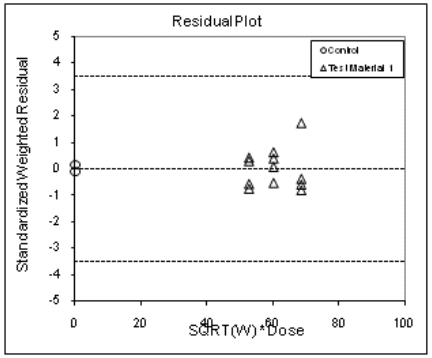
Reference Material
Sodium Arsenate



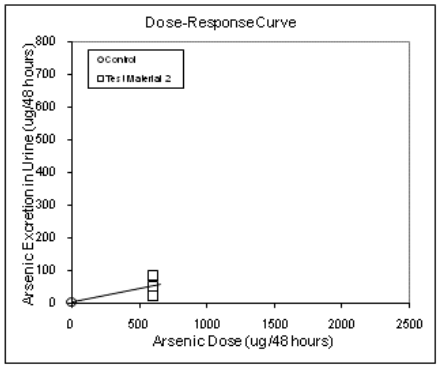


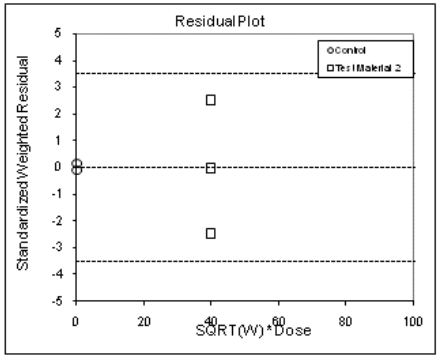
Test Material 1
Butte TM1



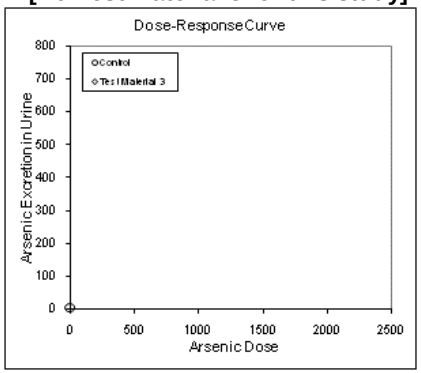


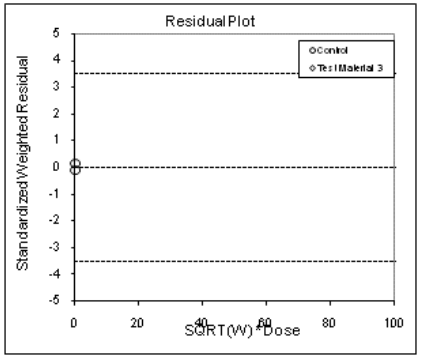
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	3.0	0.9
b1	0.26	0.01
b2	0.05	0.00
b3	0.08	0.01
b4	–	–
Covariance (b1,b2)	0.0209	–
Covariance (b1,b3)	0.0077	–
Covariance (b1,b4)	–	–
Degrees of Freedom	27	–

[a] $y = a + b1*x1 + b2*x2 + b3*x3$

ANOVA

Source	SSE	DF	MSE
Fit	391.99	3	130.66
Error	20.44	26	0.79
Total	412.43	29	14.22

Statistic	Estimate
F	166.233
p	< 0.001
Adjusted R^2	0.9447

RBA and Uncertainty

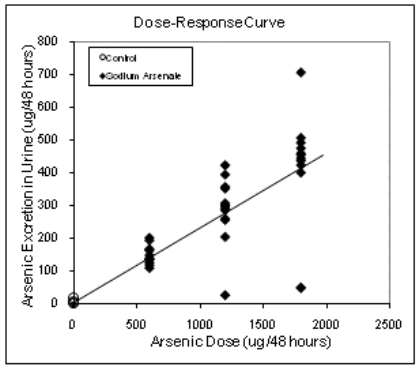
	Test Material 1	Test Material 2	Test Material 3
RBA	0.18	0.32	–
Lower bound[b]	0.15	0.25	–
Upper bound[b]	0.21	0.40	–
Standard Error[b]	0.020	0.046	–

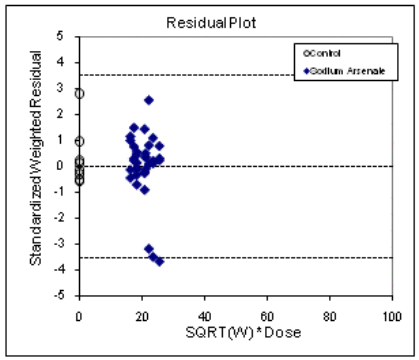
[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

Figure 18d - All Data
Phase III Experiment 3 Digestion Method 1

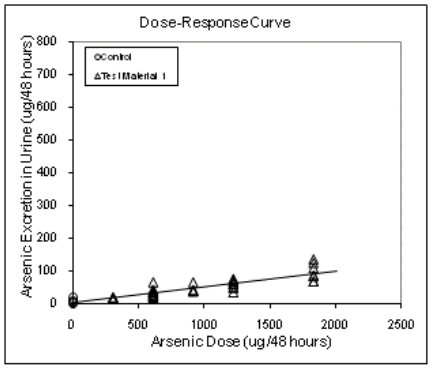
All Days (Days 6/7, 8/9, 10/11)

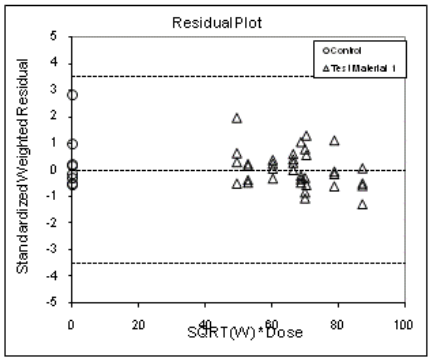
Reference Material
Sodium Arsenate



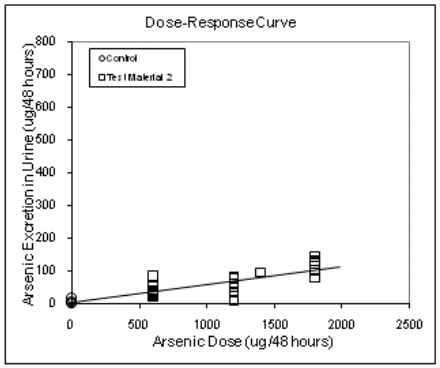


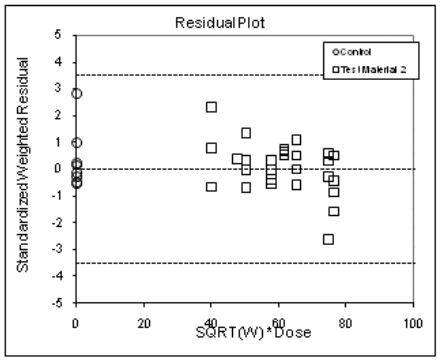
Test Material 1
Butte TM1



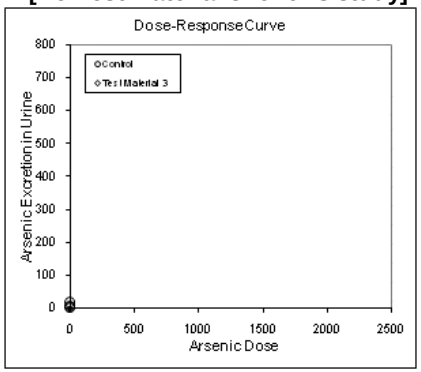


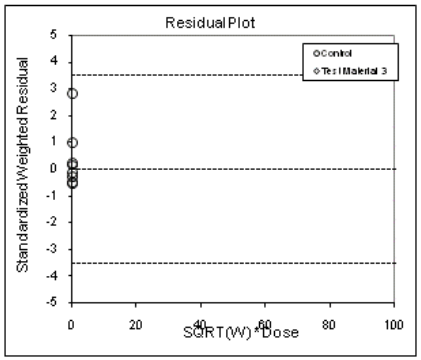
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	3.5	0.8
b1	0.23	0.01
b2	0.05	0.00
b3	0.06	0.00
b4	–	–
Covariance (b1,b2)	0.0176	–
Covariance (b1,b3)	0.0122	–
Covariance (b1,b4)	–	–
Degrees of Freedom	103	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	1332.72	3	444.24
Error	207.81	102	2.04
Total	1540.54	105	14.67

Statistic	Estimate
F	218.045
p	< 0.001
Adjusted R^2	0.8611

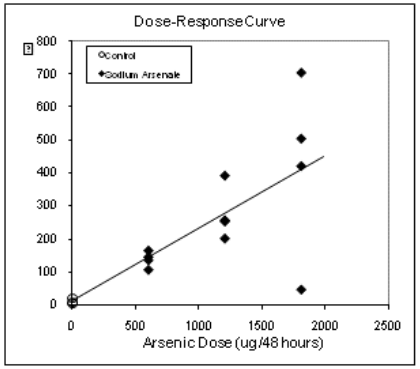
RBA and Uncertainty

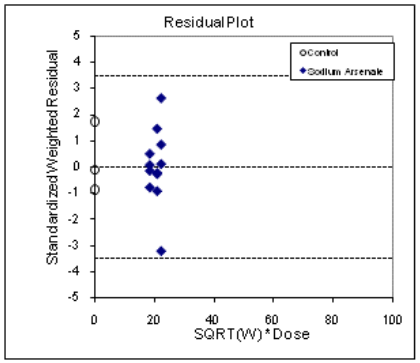
	Test Material 1	Test Material 2	Test Material 3
RBA	0.20	0.24	–
Lower bound[b]	0.17	0.21	–
Upper bound[b]	0.24	0.28	–
Standard Error[b]	0.019	0.023	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

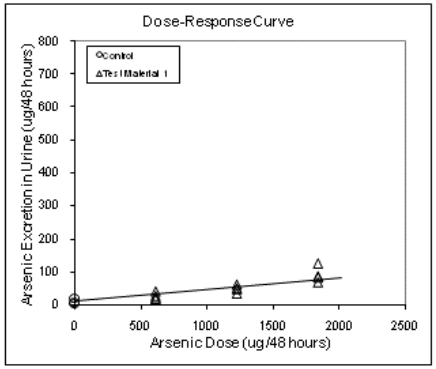
Figure 18a - Outliers Excluded
Phase III Experiment 3 Digestion Method 1
Days 6/7

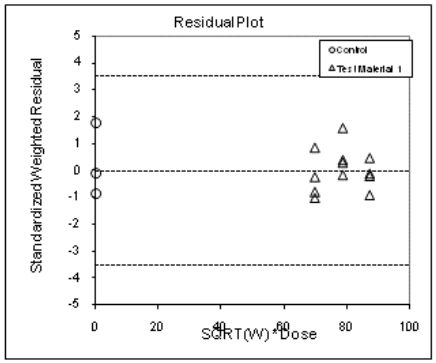
Reference Material
Sodium Arsenate



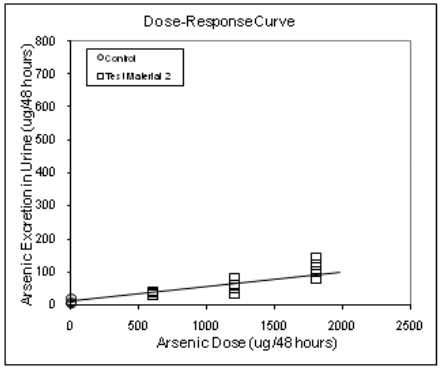


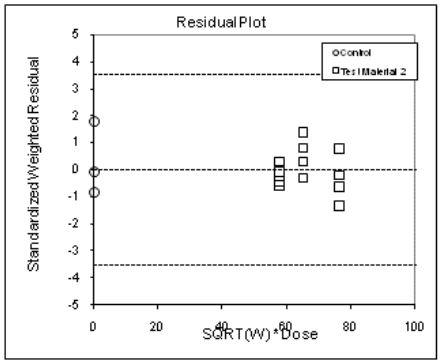
Test Material 1
Butte TM1



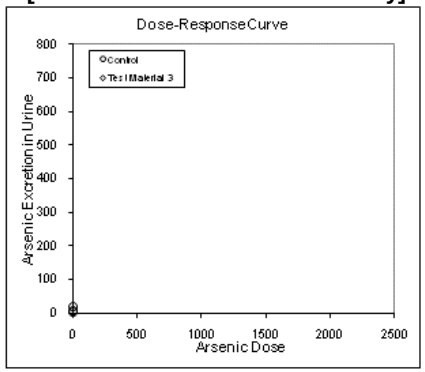


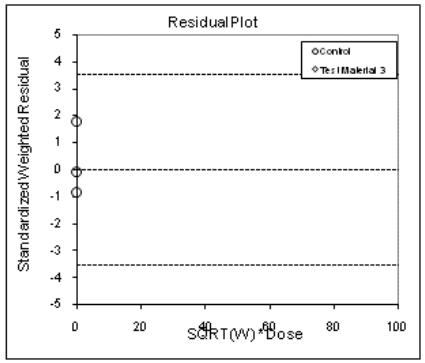
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	9.8	3.3
b1	0.22	0.02
b2	0.04	0.01
b3	0.05	0.01
b4	–	–
Covariance (b1,b2)	0.0767	–
Covariance (b1,b3)	0.0679	–
Covariance (b1,b4)	–	–
Degrees of Freedom	36	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	340.24	3	113.41
Error	73.45	35	2.10
Total	413.68	38	10.89

Statistic	Estimate
F	54.046
p	< 0.001
Adjusted R^2	0.8072

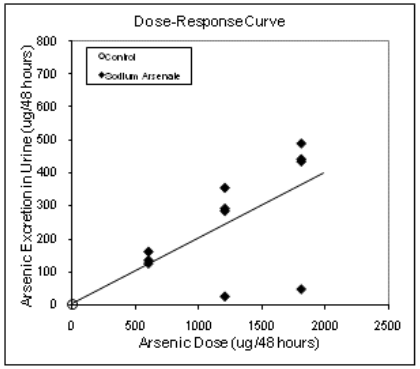
RBA and Uncertainty

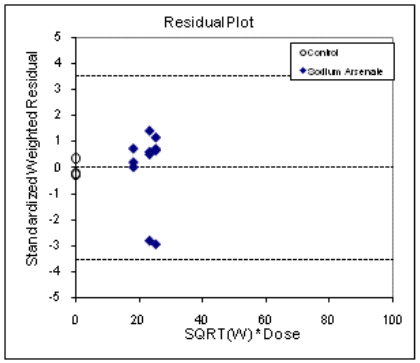
	Test Material 1	Test Material 2	Test Material 3
RBA	0.16	0.20	–
Lower bound[b]	0.11	0.15	–
Upper bound[b]	0.21	0.27	–
Standard Error[b]	0.030	0.035	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

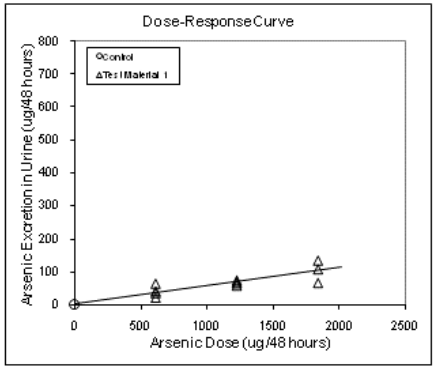
Figure 18b - Outliers Excluded
Phase III Experiment 3 Digestion Method 1
Days 8/9

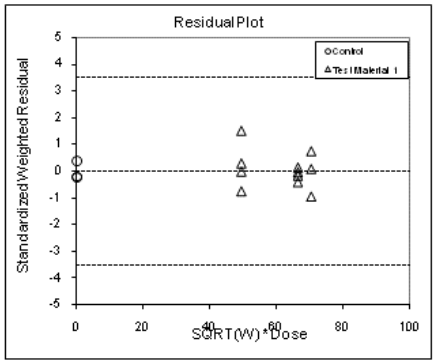
Reference Material
Sodium Arsenate



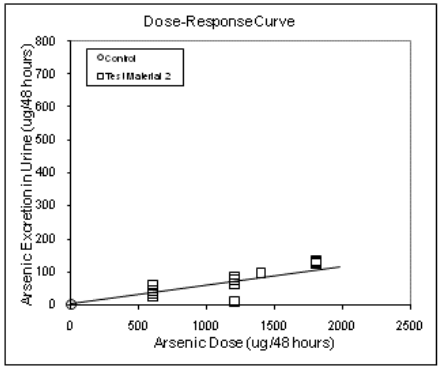


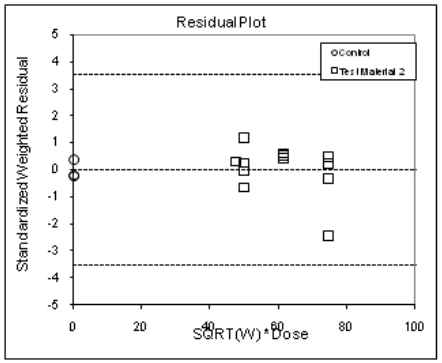
Test Material 1
Butte TM1



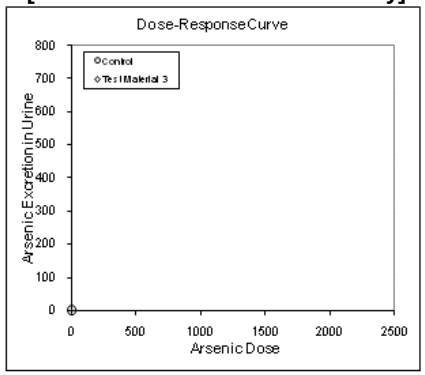


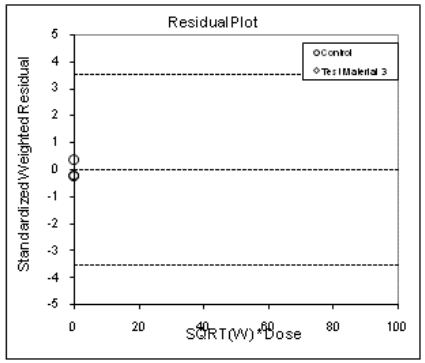
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	2.9	1.3
b1	0.20	0.02
b2	0.06	0.01
b3	0.06	0.01
b4	–	–
Covariance (b1,b2)	0.0074	–
Covariance (b1,b3)	0.0080	–
Covariance (b1,b4)	–	–
Degrees of Freedom	34	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	496.43	3	165.48
Error	84.95	33	2.57
Total	581.38	36	16.15

Statistic	Estimate
F	64.284
p	< 0.001
Adjusted R^2	0.8406

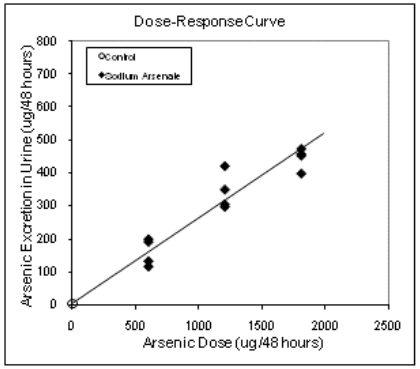
RBA and Uncertainty

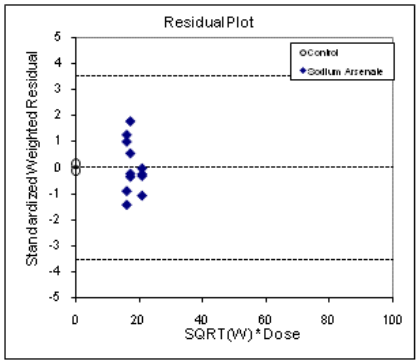
	Test Material 1	Test Material 2	Test Material 3
RBA	0.28	0.28	–
Lower bound[b]	0.21	0.21	–
Upper bound[b]	0.37	0.37	–
Standard Error[b]	0.049	0.048	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

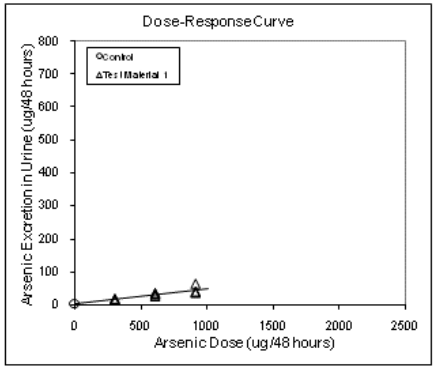
Figure 18c - Outliers Excluded
Phase III Experiment 3 Digestion Method 1
Days 10/11

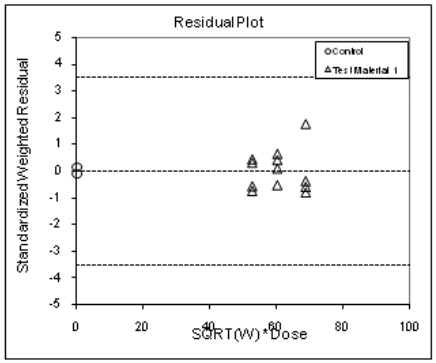
Reference Material
Sodium Arsenate



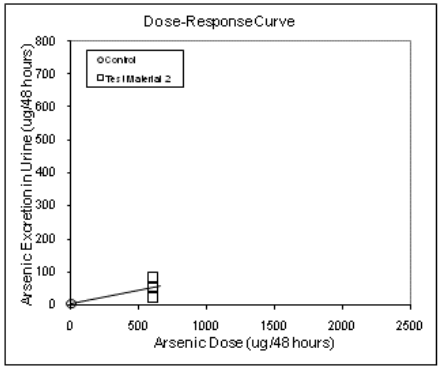


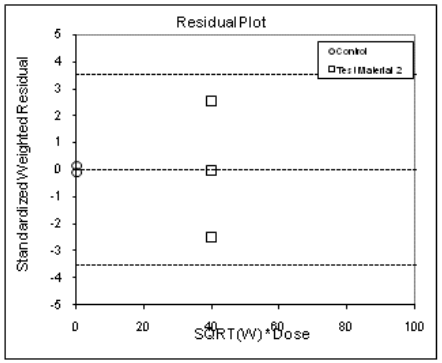
Test Material 1
Butte TM1



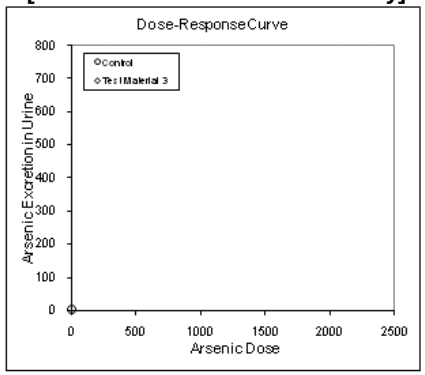


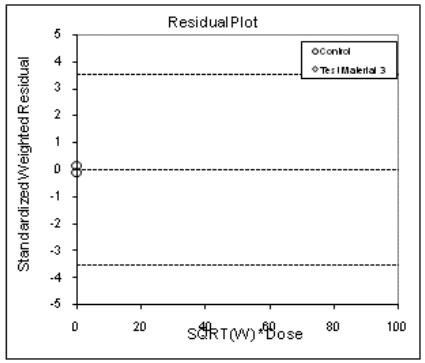
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	3.0	0.9
b1	0.26	0.01
b2	0.05	0.00
b3	0.08	0.01
b4	–	–
Covariance (b1,b2)	0.0209	–
Covariance (b1,b3)	0.0077	–
Covariance (b1,b4)	–	–
Degrees of Freedom	27	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	391.99	3	130.66
Error	20.44	26	0.79
Total	412.43	29	14.22

Statistic	Estimate
F	166.233
p	< 0.001
Adjusted R^2	0.9447

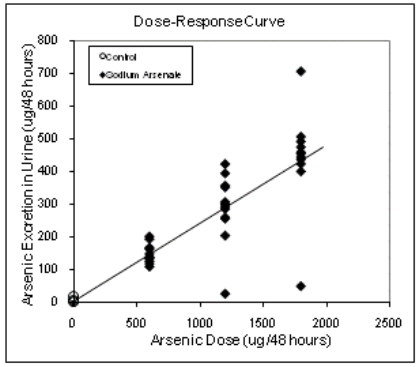
RBA and Uncertainty

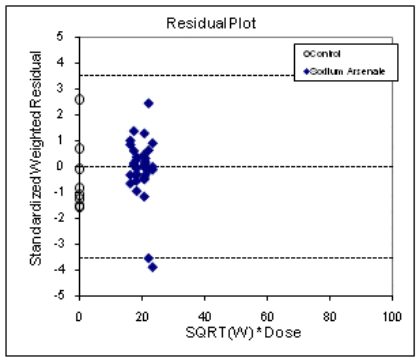
	Test Material 1	Test Material 2	Test Material 3
RBA	0.18	0.32	–
Lower bound[b]	0.15	0.25	–
Upper bound[b]	0.21	0.40	–
Standard Error[b]	0.020	0.046	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.

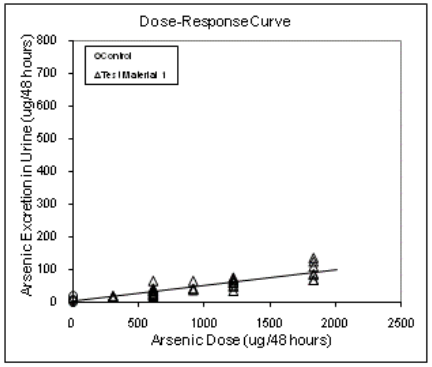
Figure 18d - Outliers Excluded
Phase III Experiment 3 Digestion Method 1
All Days (Days 6/7, 8/9, 10/11)

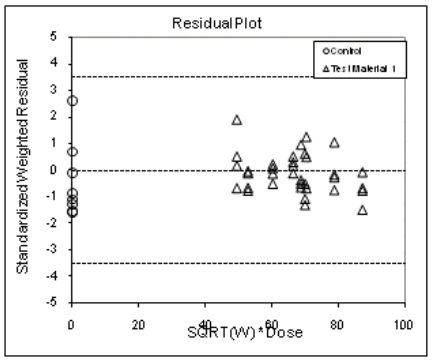
Reference Material
Sodium Arsenate



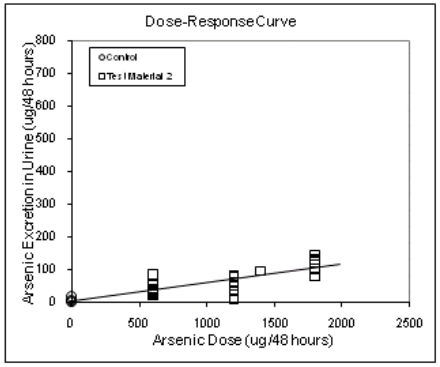


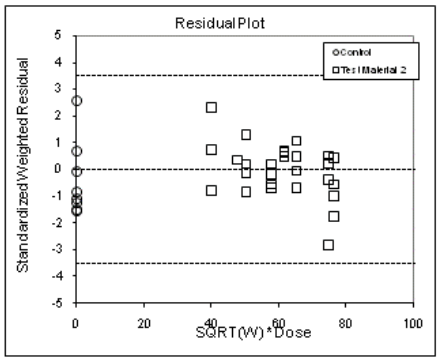
Test Material 1
Butte TM1



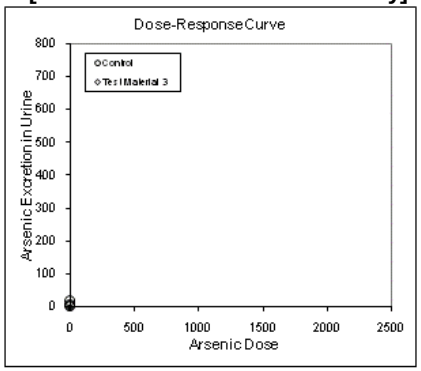


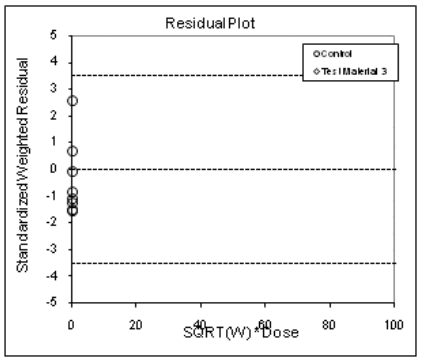
Test Material 2
Butte TM2





[No Test Material 3 for this study]





Summary of Fitting[a]

Parameter	Estimate	Standard Error
a	5.3	3.2
b1	0.24	0.01
b2	0.05	0.00
b3	0.06	0.01
b4	–	–
Covariance (b1,b2)	0.1723	–
Covariance (b1,b3)	0.1487	–
Covariance (b1,b4)	–	–
Degrees of Freedom	208	–

[a] y = a + b1*x1 + b2*x2 + b3*x3

ANOVA

Source	SSE	DF	MSE
Fit	1359.38	3	453.13
Error	191.41	101	1.90
Total	1550.79	104	14.91

Statistic	Estimate
F	239.094
p	< 0.001
Adjusted R^2	0.8729

RBA and Uncertainty

	Test Material 1	Test Material 2	Test Material 3
RBA	0.20	0.23	–
Lower bound[b]	0.17	0.20	–
Upper bound[b]	0.23	0.27	–
Standard Error[b]	0.019	0.023	–

[b] Uncertainty bounds and standard error were calculated using Fieller's theorem.