

# Analytical Services Branch NRAS Program

## Dioxin and Furan

The EPA Analytical Services Branch (ASB) of the Office of Superfund Remediation and Technology Innovation (OSRTI) offers nationally administered analytical services that provide data from the measurement of various pollutants in environmental samples from known or suspected hazardous waste sites using EPA standardized analytical methods to measure pollutants and provide critical data in support of the Superfund decision-making process. One such service provides support for measurement of certain chlorinated dioxin and furan congeners. Since this service is not one of the analyses conducted under the Superfund Contract Laboratory Program (CLP), it is managed as part of the Non-Routine Analytical Services (NRAS) program.

## Description of Services

The dioxin and furan analytical service provides a flexible framework for laboratories to apply EPA analytical methods for the isolation, detection, and quantitative measurement of seventeen 2,3,7,8-substituted tetra- through octa- chlorinated dibenzo-dioxins (CDDs) and chlorinated dibenzo-furans (CDFs) in water, soil, sediment, sludge, non-human tissue, ash, oil, and oily matrices. EPA ASB has prequalified laboratories that use the Dioxin and Furan Statement of Work (SOW) DLM02.X to provide this service under a Blanket Purchase Agreement (BPA). The BPAs are managed by the ASB and the Office of Acquisition Management (OAM). Regional customers utilize a “buy-in” process to acquire analytical services and a Request for Quote is used to determine award.

The standard data Turnaround Time (TAT) for this service is 35 days after laboratory receipt of the last sample in the Sample Delivery Group (SDG). Additional Turnaround Time options (14 and 21) are available upon request. Cost per sample is commensurate with TAT.

## Requesting the Service

The dioxin and furan analytical service can be requested by EPA Regional personnel by submitting a Task Order (TO) to EPA ASB. These TOs can modify the SOW to meet project-specific requirements [e.g., changes in TAT, detection limits, or the Target Compound List]. The NRAS Dioxin /Furan Program can accommodate approximately 500 samples a month (nationally) using the standard analytical method and TAT. Additional information about this and other NRAS Programs can be found at:

<http://www.epa.gov/superfund/programs/clp/analytic.htm#nonroutine>

## Data Uses

The dioxin and furan analytical service provides data that can be used by EPA to determine: (1) the nature and extent of contamination at a hazardous waste site; (2) priorities for response based on risks to health and the environment; (3) appropriate clean-up actions; and (4) when remedial actions are complete. The data may be used in the investigation of hazardous waste sites, including: site inspections; Hazard Ranking System (HRS) scoring; remedial investigation/feasibility studies; remedial design; treatability studies; and removal actions. In addition, this service provides data that are available for use in Superfund enforcement and litigation activities.

## Target Compounds and Detection Limits

The applicable target compounds and Contract Required Quantitation Limits (CRQLs) for this service are listed in exhibit C of the SOW, which can be accessed at: <http://www.epa.gov/superfund/programs/clp/dlm2.htm>. For water samples, the lowest reportable CRQL is 10.0 pg/L. For solid samples, the lowest reportable CRQL is 1.0 ng/kg.

### CHLORINATED DIBENZO-P-DIOXIN/CHLORINATED DIBENZOFURAN (CDD/CDF) TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

CDD/CDF	CAS No.	WATER (pg/L)	SOLIDS* (ng/kg)
2,3,7,8-TCDD	1746-01-6	10	1.0
1,2,3,7,8-PeCDD	40321-76-4	50	5.0
1,2,3,6,7,8-HxCDD	57653-85-7	50	5.0
1,2,3,4,7,8-HxCDD	39227-28-6	50	5.0
1,2,3,7,8,9-HxCDD	19408-74-3	50	5.0
1,2,3,4,6,7,8-HpCDD	35822-46-9	50	5.0
OCDD	3268-87-9	100	10
2,3,7,8-TCDF	51207-31-9	10	1.0
1,2,3,7,8-PeCDF	57117-41-6	50	5.0
2,3,4,7,8-PeCDF	57117-31-4	50	5.0
1,2,3,6,7,8-HxCDF	57117-44-9	50	5.0
1,2,3,7,8,9-HxCDF	72918-21-9	50	5.0
1,2,3,4,7,8-HxCDF	70648-26-9	50	5.0
2,3,4,6,7,8-HxCDF	60851-34-5	50	5.0
1,2,3,4,6,7,8-HpCDF	67562-39-4	50	5.0
1,2,3,4,7,8,9-HpCDF	55673-89-7	50	5.0
OCDF	39001-02-0	100	10

\* Solids include soil, sediment and sludge matrices.

NOTE: The values in these tables are quantitation limits, not absolute detection limits. The quantitation limits in these tables are set at the concentrations in the sample equivalent to the concentration of the lowest calibration standard analyzed for each analyte. Specific quantitation limits are highly matrix-dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

## Methods

Samples are analyzed for CDDs and CDFs using High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS). The DLM02.X SOW is based on the EPA Office of Water Method 1613B. This method represents the EPA Office of Water's most recent requirements for detecting and quantitating CDDs and CDFs. Additional information about these methods is provided in Exhibit D of the SOW which may be accessed at: <http://www.epa.gov/superfund/programs/clp/dlm2.htm>

## Data Deliverables

Data deliverables for this service include hardcopy data reporting forms and supporting raw data. Laboratories must also submit the data electronically, referred to as an Electronic Data Deliverable (EDD), within the contract required TAT. EPA then processes the EDD through a web-based data assessment tool - the Electronic Data eXchange and Evaluation System (EXES). EXES provides data users with electronic data assessment/usability reports and spreadsheets within 24 to 48 hours of data receipt that can be tailored to regional data management needs. Further data evaluation can be performed by regional customers using the National Functional Guidelines (NFG) document provided by EPA ASB.

EXES reports also facilitate the transfer of analytical data into regional client databases. In addition to the automated data assessment/usability reports described above, laboratories are provided with a data assessment report documenting instances of noncompliance. Other EDDs (i.e., Excel, txt and csv) are also available upon request.

## Quality Assurance (QA) and Quality Control (QC)

The QA process consists of management review and oversight at the planning, implementation, and completion stages of the environmental data collection activity. This process ensures that the data provided are of known and documented quality.

Each contract laboratory prepares a Quality Assurance Plan (QAP) to provide sound analytical chemical measurements. The QAP must specify the policies, organization, objectives, and functional guidelines, as well as the QA and QC activities designed to achieve the data quality requirements in the contract.

The QC process includes those activities defined by regional customers required during analytical data collection to produce data suitable for decision making. The analytical data acquired from QC procedures are used to estimate and evaluate the analytical results. The QC procedures required for this analysis ensure data of known quality suitable for most environmental decision making purposes. More detailed QA/QC procedures for this analytical service are provided in Exhibit E of the SOW, which can be accessed at: <http://www.epa.gov/superfund/programs/clp/dlm2.htm>

## Performance Monitoring Activities

Laboratory performance monitoring activities are provided primarily by ASB and the Regions to ensure that contract laboratories are producing data of the appropriate quality. These performance monitoring activities may include on-site laboratory evaluations, electronic data audits, data package audits, HRGC/HRMS tape audits, and the evaluation of laboratory performance through the use of blind Performance Evaluation (PE) samples.

## Additional Information

For more information, or to submit suggestions to improve this analytical service, please contact:

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