DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

April 29, 2008

Ms. Denise Boone
U.S. Environmental Protection Agency
77 West Jackson Blvd., SR-6J
Chicago, IL 60604

Subject: Health concerns related to asbestos in stockpiled demolition debris from the former Solvay Coke facility, 311 Greenfield Ave., Milwaukee.

Dear Ms. Boone:

Following the demolition of Solvay Coke buildings during 2003 and 2004, building debris was stockpiled at locations throughout the site. Although the original demolition plans included provisions to properly remove and dispose of asbestos-containing material (ACM; defined as > 1% asbestos), it has since been observed that some of the debris piles include some ACM. *Natural Resource Technology, Inc.* later assessed the property for the presence of asbestos in demolition stockpiles and soil (NRT 2007).[1]

In light of the presence of ACM on the Solvay site, the U.S. EPA requested that Wisconsin Division of Public Health (DPH) provide an independent evaluation of health concerns posed by the asbestos contamination reported by NRT (2007). Since December 2001, DPH prepared a previous health consultation for this property (ATSDR 2003),[2] has made numerous site visits, and has been involved in responding to health-related issues concerning the property.

The previous health consultation (ATSDR 2003) briefly addressed the asbestos issue by identifying possible hazards from ACM during future remediation:

> *Dispersal of asbestos pipe insulation during building demolition.* The EPA *Site Assessment Report* (2) included sampling and inventory for asbestos containing materials (ACMs) in and around the buildings. The sampling and inventory focused on 2,745 feet of outdoor pipe insulation. The *Site Assessment Report* acknowledges that the sampling was preliminary and did not include asbestos-containing building materials

[1] NRT. 2007. Asbestos Survey: Former Milwaukee Solvay Coke & Gas Company Site, 311 East Greenfield Avenue. Milwaukee, Wisconsin. *Natural Resource Technology, Proj. 1886, Nov. 2, 2007.*

[2] ATSDR. 2003. Health Consultation, Solvay Coke Brownfield, Milwaukee, Milwaukee County, Wisconsin. Agency for Toxic Substances and Disease Registry. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service. Internet: http://www.atsdr.cdc.gov/hac/PHA/solvaycoke/sol_p1.html

other than the pipe wrap. It is not known whether non-inventoried ACMs are sufficiently friable to pose an environmental health threat to site workers. The removal of friable ACMS will require proper mitigation procedures to avoid environmental dispersion and direct exposure to workers during demolition.

Most of the ACM was apparently disposed of off-site during the demolition phase of the remediation. However, the NRT 2007 study identified ACM remaining in demolition debris on-site, including Transite fragments (ranging from *ca.* 2-30 cm. in diameter), asbestos-resin adhered to brick, asphalt roofing material, and concrete board. Asbestos was also detected in many soil samples throughout the site.

Potential exposure population. Based on prior knowledge of site conditions and current information from DNR field staff, we know that the site is relatively remote, with the nearest residential neighborhoods being about 650 feet west of the property, across and industrial area, highway 32, and the Chicago and Northwestern Railroad corridor. These obstacles, along with a somewhat deteriorated chain link fence around the property, are barriers to casual visitation. However, there are people, both authorized and unauthorized, who come into closer contact with the site. These include at least one homeless person occupying an unused building adjacent to the site, trespassers on the property (evidenced by extensive painted graffiti on-site), people working offsite but adjacent to the property, and anyone entering the site for occupational reasons. The possibility of exposure to each of these groups was evaluated with regard to the following *potential exposure pathways to ACM:*

- Inhalation of asbestos fibers resulting from offsite dispersion from demolition stockpiles containing ACM
- Inhalation of asbestos fibers by on-site workers that are handling ACM; potential secondary inhalation exposure to family members from clothing contaminated with ACM dust
- Inhalation of asbestos fibers by on-site trespassers handling ACM; potential secondary inhalation exposure to family members from clothing contaminated with ACM dust.
- Inhalation of asbestos fibers-contaminated soil on- or off-site.

Environmental concentrations used as comparison values

ACM. Standards for the various definitions of asbestos-containing material and the handling of those materials are presented under The Wisconsin Administrative Code, *ch.* NR 447.02 (WAC 2004).[3] In general, ACM would contain at least 1% asbestos as determined by polarized light microscopy (PLM) and would be classified as friable or non-friable. Therefore, the 1% asbestos criterion is a regulatory definition that corresponds to the detection limit for the PLM analytical method. It is used to make

[3] WAC. 2004. Control of Asbestos Emissions. Wisconsin Administrative Code, Ch. 447. Internet: http://www.legis.state.wi.us/rsb/code/nr/nr447.pdf

decisions regarding the disposition of asbestos-containing waste materials. It is not a health risk-based concentration that determines whether a material could pose a health hazard resulting from possible exposure.

Ambient Air. EPA and ATSDR have not published health-based standards and guidelines for asbestos in air, but the ATSDR *Toxicological Profile for Asbestos* includes a summary (ATSDR 2001, Table 6-4)[4] of typical general and occupational exposures. Clearance levels and action levels for *indoor* air were developed by EPA for the World Trade Center Response (EPA 2004),[5] but are not cited here as the exposure and risk scenario for outdoor air differs from indoors. In addition, risk-based screening criteria for other sites that EPA and ATSDR have investigated have been developed for residential exposure situations. However, the conditions at Solvay do not represent either of these exposure situations. Occupational exposure during ACM removal is a legitimate exposure scenario at the former Solvay facility. NIOSH (2005)[6] recommends that occupational exposures be reduced to the lowest feasible concentration, and recommends a relative exposure limit of 0.1 fiber/cc, as determined by NIOSH Method 7400.

Soil. Health-based standards and guidelines for safe asbestos concentrations in residential soil have not been established. DPH acknowledges, as does EPA in their 2003 report,[7] that it is difficult to predict concentrations of asbestos in air resulting from soil contamination due to the variety of factors affecting the dispersion of soil dust. Any remedial actions will need to address appropriate clean-up criteria based on anticipated future land use

DPH site visit

DPH toured the site on April 4, 2008, along with Mark Davis, WDNR asbestos expert, and Rachel Schneider representing the RP group. Each of the ACM areas identified by NRT (2007) was inspected, as well as the gravel vehicle pathways and areas outside of the abandoned buildings. In agreement with NRT 2007, we found small (*ca.* 2-15cm diameter) pieces of ACM scattered intermittently at the locations indicated in NRT 2007, as well as on the gravel roadways. The ACM found consisted primarily of wavy Transite and tarpaper roofing material. We also found a few < 20cm lengths of possible asbestos-

[4] ATSDR. 2001. Toxicological profile for asbestos. Agency for Toxic Substances and Disease Registry . Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

[5] EPA. 2004. *Charge for the WTC Peer Consultant, Memo from RP Nolan to Kate Schalk.* U.S. Environmental Protection Agency. Internet: http://www.epa.gov/WTC/panel/pdfs/nolan.pdf

[6] NIOSH. 2005. Appendix C *in* Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Pub. No. 2005-149.

[7] EPA. 2003. Libby asbestos site, residential/commercial cleanup, action level and clearance criteria: Technical memorandum (Draft Final- Dec. 15, 2003). U.S. Environmental Protection Agency, Region 8.

containing rope gasket. Representative samples of ACM were placed in plastic bags and field-tested for friability. The Transite pieces did not disintegrate under hand pressure, and there was no apparent dust generated when abraded within the plastic bag. However, in comparing various Transite fragments, some had sharp edges indicating recent breakage while others had rounded edges indicating weathering and corresponding asbestos dispersal. In contrast, the roofing material was relatively easy to tear, but due to the resin content there was no apparent generation of dust within the plastic bag. Some roofing pieces had fibrous edges when torn, suggesting the potential for asbestos dispersal if weathered. One location, A25 (NRT 2007), contained demolished metal pipe with some visibly friable pipe wrap. Some of the demolition brick, particularly near the standing smoke stack, has a black resin coating identified by NRT as ACM. This coating is not apparently friable, but it is not clear whether there is a potential for the creation of asbestos dust should this brick be broken when handled by heavy machinery.

Evaluation of exposure pathways

Off site dispersion and inhalation of ACM dust from demolition stockpiles. The limited amount of ACM observed around demolition debris piles does not appear to be particularly friable, but is nonetheless exposed to weathering and wind dispersion. There is significant uncertainty in attempting to estimate asbestos exposure levels for individuals who may come into contact with this ACM. However, this uncertainty does not negate the obligation to properly dispose of ACM under national emissions standards for hazardous air pollutants (NESHAPS) rules. Removal of the source ACM from the Solvay property would certainly eliminate any potential hazard.

Dispersion to air by on-site workers handling ACM, followed by direct inhalation or secondary inhalation to ACM dust on clothing. Exposure to airborne asbestos is predictably higher to those actively handling ACM in demolition debris than under conditions of passively weathered ACM. There is not enough current information to quantify this exposure. DPH agrees, with *Proposed Changes to the RI/FS* (RETEC 2007)[8] which would include provisions for worker safety to those handling ACM that would prevent both direct inhalation of asbestos and secondary inhalation of dust from contaminated clothing.

Dispersion to air by on-site trespassers handling ACM, followed by direct inhalation or secondary inhalation of ACM dust on clothing. Trespassers handling ACM on-site would face exposure scenarios similar to workers, although conditions would likely be less dusty. That exposure would likely be of a much shorter duration; however these individuals would not have respiratory or clothing protection that workers would be required to wear.

[8] RETEC. 2007. Milwaukee Solvay Coke and Gas Site: Proposed changes to RI/FS planning documents based on asbestos survey. Dec. 19, 2007 letter from Schmitz and Blumer of The RETEC Group to Denise Boone, U.S. EPA.

Inhalation of asbestos-contaminated soil on- or off-site. Soil samples from most of areas B and C (NRT 2007) indicate the hazard from inhalation of trace asbestos in soil in those sections of the property is likely to be minimal. In section A, chrysotile was qualitatively reported in 20 of 48 soil samples. Quantitative composite samples were not reported from this area of the property, and it is not clear whether asbestos is present in these soils at levels of health concern.

Conclusions

The evaluation of the various components of the former Solvay property with regard to asbestos contamination can be categorized in any of three ways. A specific location may have asbestos contamination insufficient to be a public health concern, a location may require ACM removal to prevent an ongoing concern to the public or workers on-site, or a location with ACM or asbestos soil contamination may be managed in-place.

- The data indicate all of the composite surface soil samples in areas B and C are below the CARB 435 detection limit of 0.25% asbestos. However, there is uncertainty about the asbestos content of soils beneath demolition debris piles within those areas.

- Most of the visible ACM building debris around demolition piles is unlikely to result in asbestos exposure due to low friability. However, any physical disturbance of the debris piles that would possibly crush or fragment the ACM could result in the release of asbestos fibers. The soils beneath or adjacent to the asbestos-containing debris piles should be assumed to be contaminated unless proven otherwise with actual sampling data.

- Based on observed site conditions, the most likely potential exposures will be to on-site workers handling ACM and those exposed to dust in building demolition piles.

Recommendations

- Friable ACM at location A25 (NRT 2007), and any other friable ACM that may be found on-site, should be removed in the short term to limit its dispersion on-site and potentially off-site.

- Future removal of building demolition piles should include the removal of surface soil underlying and surrounding those piles to the extent needed to remove visible ACM building debris and prevent possible asbestos dispersion. These soils will require either further analysis to quantitatively verify asbestos content, or preventive removal.

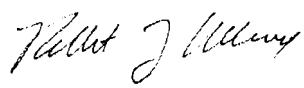
- Future work to remove building demolition piles should include a site safety plan to include provisions for worker safety to those handling ACM and to prevent breathing demolition dust.

- Future site activities should be conducted using dust control techniques on demolition piles with identified ACM, and on unimproved vehicle pathways containing ACM, in order to avoid possible dispersal of asbestos fibers.

- The disposal of demolition piles that include ACM is regulated by state and federal laws. Following these laws will help prevent the dispersal of ACM in demolition debris.

ATSDR and DHFS are available to provide technical assistance and to respond to health concerns from residents or local officials. Mark Johnson can be contacted at 312/353-3436, MDJohnson@cdc.gov; Rob Thiboldeaux is available at 608/267-6844, robert.thiboldeaux@wi.gov.

Sincerely,



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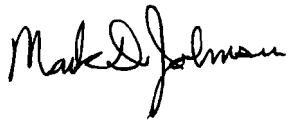

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