

ATSDR Record of Activity

UID #: GAP 6 Date: 11/29/2006 Time: 10:00 am
Site Name: CAI, INC. OF DANVERS City: Danvers County: Essex State: MA
CERCLIS #: n/a Cost Recovery #: 10DT

Site Status: Emergency Response

Activities: Health Consultation-Health Implications

Requestor and Affiliation: (EPA) Michael Barry, phone (617) 918-1344
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City: Boston State: MA Zip: 02114

HC ASA Category: Health Implications

Statement of Request: Michael Barry, (EPA On-Scene Coordinator) requested a public health determination for a second round of air sampling data being collected at various locations near the fire/explosion.

Narrative Summary: At 2:45 am EST on November 22, 2006, a fire and explosion occurred at 126 Water Street. EPA collected four ambient air samples on November 22, 2006. Those data were reviewed by ATSDR and the Massachusetts Department of Public Health on November 23, 2006. The levels of chemicals in the ambient air were determined to not present any health concerns.

On November 27 and 28, 2006, EPA conducted another round of ambient air sampling. EPA requested a review those data.

Discussion/Toxicological Implications: The potential exposure pathways for individuals returning back to their homes include the inhalation of contaminated air. The U.S. EPA deployed five Summa canisters on each of two days in the community near the perimeter of the scene of the emergency response. The Summa canisters were spatially distributed to collect air from both upwind and down wind locations. The Summa canisters were located from 100 to 700 feet from the site. The Summa canisters were analyzed by gas chromatography/ion trap mass spectroscopy (GC/MS). All samples were received and logged in by the EPA laboratory and analyzed according to the EPA New England Laboratory Standard Operating Procedures. The results are presented below along with the respective chronic exposure-based health comparison values.

Chemical	Maximum Concentration ppb/v	Comparison Values (ppb)	Source
1,2,4-Trimethylbenzene	2.43	1.3	prg
1,3,5-Trimethylbenzene	0.818	1.3	prg
4-Ethyltoluene	2.98	8,000	teel
Benzene	1.48	10	c mrl
Dichlorodifluoromethane	0.569	36	rbc
Ethylbenzene	13.9	200	rbc
Heptane	25.5	85,000	NIOSH rel
Hexane	2.59	600	c mrl
m/p-Xylenes	24.6	50	c mrl
Methyl Ethyl Ketone	22.6	2,000	rbc
Methyl Isobutyl Ketone	5.88	730	rbc
Methylene Chloride	1.08	300	c mrl
Methyl-t-Butyl Ether	0.96	700	c mrl
o-Xylene	5.61	50	c mrl
Tetrachloroethylene	0.283	40	c mrl
Tetrahydrofuran	56.5	0.31	rbc
Toluene	40.3	80	c mrl
Trichlorofluoromethane	0.429	130	rbc

c mrl = ATSDR Chronic Minimal Risk Level

prg = EPA's Preliminary Remediation Goal

rbc = EPA Risk Based Concentration

rbc = EPA Reference Concentration

NIOSH rel = National Institute for Occupational Safety and Health recommended exposure limits

teel = Temporary Emergency Exposure Limits

Sixteen of the eighteen chemicals detected in the air collected by the Summa canisters were well below their respective health comparison values for chronic exposures. The two chemicals that were above their respective comparison values are 1,2,4-trimethylbenzene and tetrahydrofuran.

The wind direction measured during the sampling events was from the South on the first day and from the North on the second day. The wind speed was about five miles per hour.

1,2,4-trimethylbenzene was detected slightly above the comparison value in one of the ten Summa canisters. The location of that sampling point was immediately downwind of the site. However, this chemical was not detected in the residential community areas. According to ATSDR's understanding, the comparison value used in this case is intended to determine if EPA may need to take action. As such, they tend to reach the broadest definitions of effects such as odor threshold and irritant effects. Concentrations of this

compound that have been reported to actually cause health effects exceed 1000 ppb (HSDB, 2005). The concentration reported is approximately 3 orders of magnitude lower.

Tetrahydrofuran was detected above the comparison value in five of the Summa canister locations. The maximum concentration was measured immediately downwind of the site. Tetrahydrofuran is a synthetic solvent used in the production of resins. Data concerning the toxicity of tetrahydrofuran in humans is quite limited. The comparison value is based on estimated cancer risk assuming a lifetime of exposure (70 years). A study by the National Toxicology Program (NTP, 1998) reported some cancers in some animals but the incidence was similar to controls and the confidence in the results was low. The National Toxicology Program does not list tetrahydrofuran in their current edition on the Report on Carcinogens (NTP, 2005) reflecting their determination of weak evidence for carcinogenicity. The carcinogenicity of this compounds is continuing to be evaluate by the scientific community. For non-cancer effects, reports of animal studies document irritation of the skin and mucous membranes, including the eyes, nose, and upper respiratory tract, as the predominant effect from exposures to about 100,000-200,000 ppb, well above the concentrations reported for this site.

Conclusions:

1.) Two of the compounds identified in environmental sampling exceed some estimated comparison values; however, none of the data reported approach levels reported to cause actual health effects. Based on a review by ATSDR and the MDPH, these data do not pose a health concern to individuals returning to the residential areas impacted by the fire.

Recommendations:

1.) As a precaution, ATSDR and MDPH recommend at least one more round of air sampling that would include a sample from the downwind site boundary, similar to the location where the maximum concentrations were detected in this round, to monitor ambient air quality as site cleanup continues.

The conclusions and recommendations presented here are based on the information provided. If additional information becomes available or the situation at the scene changes, these conclusions and recommendations may need to be adjusted appropriately. ATSDR and MDPH are available to answer additional questions or concerns as the need arises.

Preparers:

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Concurred by:

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Signature: Date: 12/01/2006

References

HSDB, 2005. 1,2,4-trimethylbenzene, Hazardous Substance Databank, Toxicology Data Network, National Library of Medicine, National Institutes of Health, Washington, DC. June 2005. Available at <http://toxnet.nlm.nih.gov>

NTP, 1998. NTP Technical Report on the Toxicology and Carcinogenesis of Tetrahydrofuran in F344/N Rats and B6C3F Mice. National Toxicology Program. National Institutes of Health. US Department of Health and Human Services. Research Triangle Park, NC June 1998 available at http://ntp.niehs.nih.gov/ntp/htdocs/LT_rpts/tr475.pdf

NTP, 2005. Report on Carcinogens, Eleventh Edition; U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program. Available at <http://ntp.niehs.nih.gov/index.cfm?objectid=32BA9724-F1F6-975E-7FCE50709CB4C932>



**27 AND 28 NOVEMBER 2006
SUMMA AIR SAMPLE LOCATIONS**

**CAI, INC. EMERGENCY RESPONSE
126 WATER STREET
DANVERS, MASSACHUSETTS**



REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD NUMBER: 06-11-0005	CREATED BY: D. MUZRALL	CREATED ON: 11/29/2006
FILE LOCATION: E:\MA_GIS\CAI_ER\Figures\Figure 5_DM.mxd		FIGURE 5