

# Letter Health Consultation

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LOCUST GROVE MENNONITE SCHOOL  
PUBLIC HEALTH EVALUATION OF PADEP AIR MONITORING  
LANCASTER, LANCASTER COUNTY, PENNSYLVANIA

**Prepared by**  
**Pennsylvania Department of Health**

SEPTEMBER 25, 2009

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

## **Health Consultation: A Note of Explanation**

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

LOCUST GROVE MENNONITE SCHOOL

PUBLIC HEALTH EVALUATION OF PADEP AIR MONITORING

LANCASTER, LANCASTER COUNTY, PENNSYLVANIA

Prepared By:

Pennsylvania Department of Health  
Division of Environmental Health Epidemiology  
Under a cooperative agreement with the  
Agency for Toxic Substances and Disease Registry

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May 20, 2009

Ms. Joyce Epps  
Pennsylvania Department of Environmental Protection (PADEP)  
Director, Bureau of Air Quality  
RCSOB, 400 Market Street | Harrisburg, PA 17105

Ms. Epps:

Enclosed is an interagency Letter Health Consultation (LHC) from the Pennsylvania Department of Health (PADOH) and Agency for Toxic Substances and Disease Registry (ATSDR) to the Pennsylvania Department of Environmental Protection (PADEP). PADOH, working under cooperative agreement with ATSDR, was requested by PADEP to provide public health evaluation of air monitoring and sampling results for the Locust Grove Mennonite School located in Lancaster, Lancaster County, PA.

PADOH reviewed the draft PADEP report and air sampling data summary tables for the sampling performed in February 2009 by PADEP to determine the concentrations of toxic metals in particles including arsenic, beryllium, cadmium, total chromium, manganese, lead, nickel and zinc.

The findings indicate that the average level seen of each sampled metal (i.e. arsenic, beryllium, cadmium, chromium-total, chromium-VI, lead, manganese, nickel, zinc) taken individually does not reach an exposure level that would be expected to cause cancer or non-cancer health effects. Furthermore, when all of the sampled compounds are taken in combination, PADOH does not believe that these combined and added levels of exposure would be expected to cause adverse health effects. In this case, the estimated combined exposure level per the PADEP sampling is below the HI (Hazard Index) or Comparison Value (CV) of 1.0 (calculated HI = 0.16), and the exposure levels are well below the levels at which human health effects would actually reasonably be expected for these compounds over a lifetime (70 years) of exposure to those levels.

Regards,

Mark V. White, M.D., M.P.H.  
Pennsylvania Department of Health (PADOH)  
Health Assessment Section Leader  
625 Forster Street | Harrisburg, PA 17120-0701

## **Background and Statement of Issues**

The Locust Grove Mennonite School is located in Lancaster, Lancaster County, PA [1]. This TA document is in response to a request by PADEP Bureau of Air Quality to review and provide comment upon a draft PADEP report regarding recent environmental sampling data collected by PADEP in partial response to a series of *USA Today* articles published in December 2008 concerning toxic pollutants near schools across the country.

PADOH has reviewed the draft PADEP report. PADEP sampling at the school was performed to determine the concentrations of toxic metals in particles including arsenic, beryllium, cadmium, total chromium, manganese, lead, nickel and zinc. The toxic metals samples were collected over a 96-hour period (four 24-hour samples) using a high-volume particulate sampler with quartz-fiber filters, and were analyzed by the DEP Laboratory. The procedure is based on the EPA Compendium Methods IO-2 and IO-3 [1].

## **Review and Conclusions**

PADOH reviewers agree and concur with, in general, many of the statements and text in the PADEP draft document, with several important exceptions and/or points for PADEP consideration:

1. The PADEP sampling events took place at the school over a 96-hour period (four 24 hour samples), and the interpretation of those results, findings, opinions, and recommendations by PADOH based on the sampling data. It is assumed that these environmental data are representative of the environment and contaminant levels at the school, but *the sampling data provide a relatively brief snapshot in the present time, and are not necessarily indicative of past levels of exposure or of future levels of exposure.*
2. The findings indicate that the average level seen of each sampled metal (i.e. arsenic, beryllium, cadmium, chromium-total, chromium-VI, lead, manganese, nickel, zinc) taken individually does not reach an exposure level that would be expected to cause cancer or non-cancer health effects. Furthermore, when all of the sampled compounds are taken in combination, PADOH believes that these combined and added levels of exposure would not be expected to harm people's health. *In this case, the estimated combined exposure level per the PADEP sampling is below the HI or Comparison Value (CV) of 1.0 (calculated HI = 0.16), and the exposure levels are well below the levels at which human health effects would actually reasonably be expected for these compounds over a lifetime (70 years) of exposure to those levels. For example, for manganese alone, the levels are approximately 10,000 times below the LOAEL (Lowest Observed Adverse Effect Level) of 50 µg/m<sup>3</sup> for that compound as observed in human studies [2, 3, 4].*



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3. An RfC is *an estimate of a daily inhalation exposure of the human population (including sensitive subpopulations) that is likely to be without appreciable risk of deleterious effects during a lifetime.*

### **Child Health Considerations**

Children could be at greater risk than adults from certain kinds of exposures to hazardous substances. In general, children are shorter than adults are, and thus breathe dust and vapors from closer to the ground or floor. A child's lower average body weight and higher intake rate results in a greater dose of compound per unit of body weight when compared to adults. In this evaluation, children were considered to be exposed to the outdoor or ambient air, and were considered among to be the most sensitive population of persons exposed.

### **Health Outcome Data Evaluation**

The levels of contaminants and exposure scenarios detected via and based upon the sampling results provided to PADOH and ATSDR do not warrant a health registry review at this time

### **Recommendations**

At this time, as a result of the review, PADOH recommends that:

1. PADEP consider the PADOH opinions and comments in this document, especially as presented in items 1 through 3 above, and make any modifications or alterations to their draft report as appropriate.

### **Public Health Action Plan**

As always, PADOH would be willing to review any additional data provided by PADEP once those data become available, as appropriate and as able due to other program and staff commitments, responsibilities, and workload.

### **References**

1. *DEP Sampling Study at USA Today Report Sites – embargoed draft.* Locust Grove Mennonite School, Lancaster, PA. 06Apr2009.
2. *EPA IRIS (Integrated Risk Information System).* Toxicological Profile for Manganese. CASRN: 7439-96-5. Last accessed 07Apr2009.
3. *EPA IRIS (Integrated Risk Information System).* Toxicological Profile for Arsenic. CASRN: 7440-38-2. Last accessed 07Apr2009.



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4. *ATSDR*. Toxicological Profile for Manganese (Public Comment Version, 26Feb2009). Last accessed 05Aug2009.

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## Certification

This Letter Health Consultation for the Locust Grove Mennonite School in Lancaster, PA was prepared by the PADOH under a cooperative agreement with ATSDR. It is in accordance with approved methodology and procedures existing at the time that this Letter Health Consultation was initiated. Editorial review was completed by the cooperative agreement partner.

A handwritten signature in black ink, appearing to read "Alan G. Parham", is written over a horizontal line.

CAPT Alan G. Parham, MPH, REHS

Technical Project Officer, CAT, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Letter Health Consultation and concurs with its findings.

A handwritten signature in blue ink, appearing to read "Alan W. Yarbrough", is written over a horizontal line.

Alan W. Yarbrough, MS

Lead, Cooperative Agreement Team, SPS, CAPEB, DHAC, ATSDR