

Health Consultation

Comments on December 2008 draft wipe sampling risk evaluation for BRAC igloos

FORT WINGATE ARMY DEPOT

GALLUP, MCKINLEY COUNTY, NEW MEXICO

EPA FACILITY ID: NM6213820974

APRIL 1, 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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Prepared By:

Site and Radiological Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Background

Fort Wingate Depot Activity (FWDA) is a former munitions storage facility adjacent to the Navajo Nation, and located 11 miles east of Gallup, New Mexico. FWDA ended its mission in 1993, and remains under caretaker status by the United States Army while environmental investigations and clean-up are ongoing in preparation for property transfer to the Department of the Interior, with management by the Bureau of Indian Affairs for the benefit of the Navajo Nation and Pueblo of Zuni.

Conventional munitions (non-nuclear weapons) and explosives were stored in earth-covered concrete structures known as “igloos”. Approximately 732 igloos are located in 10 blocks (A-H, J-K) encompassing over 7,400 acres. When FWDA was closed, munitions and explosives were removed from the storage igloos.

The Department of the Army plans to transfer the igloos along with FWDA property to the Bureau of Indian Affairs to be held in trust for the Navajo and Zuni Nations. Future use of the igloos is intended for commercial or light industrial activities, with archival records storage an identified activity. Residential use is not foreseen. In 2000, ATSDR released a health consultation document evaluating public health implications for reuse of munitions storage magazines [1].

The United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) performed a human health assessment evaluating wipe sampling data collected in the interiors of the storage magazines [2]. USACHPPM requested that ATSDR review and comment on the risk evaluation document. Overall the risk evaluation document is very well organized, and presents the assumptions used and the inherent limitations and uncertainties in a transparent fashion. It was a complex undertaking and reflects considerable effort, research and experience in conducting human health risk evaluations. The following comments focus on the issues ATSDR believes are most significant.

Sampling data issues

In 2000, ATSDR released a health consultation document evaluating public health implications for reuse of munitions storage magazines [1]. This report recommended additional sampling in the igloo interiors after concluding that the existing data appeared inadequate to characterize the extent of contamination, possibly leading to an underestimation of the range of contamination. Further sampling has not been conducted in the igloo interiors. This wipe sampling data is the basis for the current risk evaluation. In March 2009, ATSDR sent a letter to the United States Army Corps of Engineers providing a more detailed basis for concerns regarding the inadequacy of the wipe sampling data, along with a suggested sampling approach to resolve the issue [3].

Choice of receptor populations and exposure assumptions

It is unclear why children under 4 years were not included as a receptor population in the risk evaluation. Younger children, especially in the age range of 6 months through 3 years, have potentially higher exposures due to increased mobility, exploratory and hand to mouth behaviors typical of this age group. Smaller body weight relative to intake implies a larger potential dose. Additionally, this age group experiences rapid brain and nervous system development and therefore is sensitive to the effect of neurotoxins. Lead is one of the primary contaminants of concern in the igloos and is a neurotoxin. Exposure to lead can have lasting neurological effects with significant implications. This group should be included in the evaluation. In September 2008, EPA released the Child-Specific Exposure Factors Handbook which details recommended exposure factors for children, including ages 6 months – 3 years [4]. This document would be a useful resource to USACHPMM in evaluating exposures to young children in the context of future use of the storage magazines.

From the last Fort Wingate base conversion team meeting, one of the Navajo Tribal representatives commented that typically day care is uncommon and often difficult to arrange. This has realistic implications for the exposure scenario. A working mother is likely to bring her young children with her if she works or visits the igloos during archival and other activities. In this case, her children are with her and would experience a similar exposure duration and frequency. There is no guarantee that young children will not be there. Therefore, it is prudent to make the protective assumption that children will be exposed more frequently for a longer duration than currently assumed in the draft risk assessment. It is unclear what the source and justification is for the assumption of visitor frequency and duration. Better justification and support for the exposure assumptions are needed.

Evaluation of lead uptake and BLL

Blood lead levels reflect total cumulative exposures from all sources. In interpreting the significance of an additional source of lead exposure from the igloos, additive exposures to lead from other sources should be included. In the absence of data from other environmental media (e.g. water, diet, soil/dust, air, paint) defaults can be used. The IEUBK biokinetic lead model would be an appropriate tool to evaluate the predicted contribution of lead exposure from the igloos in the context of background exposures from other sources to total blood lead [5]. Additionally, the model can be used to estimate the concentration of lead in the blood of pregnant women, and their developing fetuses that might be exposed to lead-contaminated igloo interiors. Without this information a statement that lead exposure from the igloos is not significant can not reasonably be justified.

References

1. Agency for Toxic Substances and Disease Registry. Health Consultation, Public health implications for reuse of munitions storage magazines (igloos). Fort Wingate Army Depot. U.S. Public Health Service. U.S. Department of Health and Human Services. September 2000.
2. United States Army Center for Health Promotion and Preventive Medicine. Human Health Risk Assessment No. 39-97-0AH4-08, Wipe Sampling Risk Evaluation for BRAC Igloos. Fort Wingate, NM. December 2008
3. Correspondence to Steve Smith from Scott Sudweeks regarding sampling issues at Fort Wingate storage magazines. March 4, 2009.
4. United States Environmental Protection Agency. Child-Specific Exposure Factors Handbook. EPA/600/R-06/096F. September 2008. Available online at www.epa.gov/ncea
5. United States Environmental Protection Agency. Integrated Exposure Uptake Biokinetic Model for Lead in Children, (IEUBKwin v1.0 build 264) (August, 2007). Available <http://www.epa.gov/superfund/lead/products.htm>