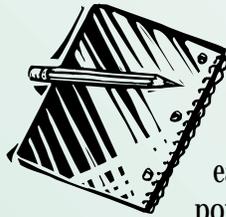


Risk Assessment Overview

HOW DO WE KNOW IT'S SAFE?

An important part of the cleanup program at the Memphis Depot involves determining the full extent of environmental conditions in order to evaluate the potential for increased risks to human health. This is called the risk assessment process.



samples show higher concentrations than are normal for the area, the risk assessment continues.

After compiling a list of possible hazards, the BCT carefully examines the data from each location to determine its potential to affect human health.

The Depot recently completed a risk assessment as part of the Remedial Investigation for the Main Installation. This article describes the risk assessment process that was followed, based on guidelines developed by the Environmental Protection Agency (EPA).

Performing a reliable risk assessment is a complex process that involves four key areas of investigation:

- ⇒ **Hazard Identification**
- ⇒ **Toxicity Assessment**
- ⇒ **Exposure Assessment**
- ⇒ **Risk Characterization**

First, the Base Realignment and Closure Cleanup Team (BCT), which includes representatives from the Depot, the EPA and the Tennessee Department of Environment and Conservation (TDEC), identifies any potential hazards found in samples taken from the site. Scientists and technicians record the frequency and locations of the compounds in both the soil and the groundwater. Then, they compare these findings to 'background levels' that may be present in the natural or local urban environment. If the



A toxicity assessment compares the types and levels of compounds identified at the site to accepted scientific standards. These standards are used to measure the potential impact of compounds on human health. An exposure assessment identifies who might come into contact with the material, including how they might come into contact, the quantities they might contact, exposure pathways and the duration of exposure. Exposure pathways are the routes by which people may come into contact with the materials, including ingestion (eating or drinking affected soil, water or fish), inhalation, or contact with the skin.

The exposure assessment also takes into account the following land-use scenarios and arrives at a calculation for each group:

- ⇒ **Residential (child and adult residents)**
- ⇒ **Industrial/Commercial (adult workers)**
- ⇒ **Youth Trespasser (age 7 to 16)**
- ⇒ **Recreational (site-specific activities)**

Finally, the risk characterization step combines the information obtained from the exposure and toxicity assessments to make a statement about the potential for increased risk

and the conditions under which the risk may occur. It is the risk characterization that is used to answer the question: "Is there an unacceptable risk?" It also defines the nature of risk in enough detail that risk management options can be considered.

For a health risk to be present, two things must occur: first, a hazard must exist and be above acceptable levels; and second, exposure must take place. While different degrees of exposure affect the levels of potential risk, there is no risk if there is no exposure. This means the presence of a potential hazard in the environment is not considered to be a risk if people are not being exposed to it.

Once the risks have been characterized, the BCT determines the acceptable cleanup levels for a site. These levels are based on strict standards to protect human health and the environment, to ensure it is restored to safe levels for the intended future use. □



EPA toxicologist Dr. Ted Simon gave RAB members a detailed overview of the Risk Assessment process at a special training session on January 19 at the Depot.