pumped from the Clinch River to East Fork Poplar Creek every day to dilute mercury to acceptable drinking water concentration limits.

Artists sketches of the Y-12 Site Integrated Modernization plan show a neat array of large production buildings situated in a clean landscape (*Y-12 Integrated Site Modernization, 21st Century* (Y-12/SEB-0124; Y/EN 5858)) —if this is, in fact, the ultimate plan for site modernization, the effects of construction on mercury contaminated sites will be dramatic. Yet the Y-12 SW-EIS analysis provides only sketchy information about concerns of contamination of soil or waters due to construction of the new Y-12. With reference to Building 9201-4, the Y-12 SW-EIS states the building is "heavily contaminated with mercury" and that it is "planned for demolition." (I, 3-68).

13/12 (cont.)

• **Beryllium**

Nuclear weapons production activities in the past, present and future, require the machining of beryllium, a toxic metal know to cause berylliosis, a chronic respiratory disease which leads to serious degeneration of lung capacity and quality of life.

Small beryllium particles may be suspended in air up to ten days, which means beryllium poses risks long after particular work with beryllium may have ended. Beryllium enters the body through the lungs, where it may reside for months or even years, slowly dissolving to enter the bloodstream.

Workers and others exposed to beryllium first become "sensitized;" sensitized workers are those most likely to later suffer from berylliosis. Acute beryllium disease causes lung damage and irritation similar to pneumonia.

At Y-12, a significant contingent of workers (more than 6 dozen) suffer from beryllium disease and others have been diagnosed with sensitivity. In January, 2000, the United States government agreed to take limited responsibility for beryllium workers, offering a financial settlement to accommodate some of their health needs.

14/14

In the Y-12 SW-EIS, DOE acknowledges that Y-12 is unable to meet the new exposure limits for beryllium established by the American Conference of Governmental Industrial Hygienists, 0.2µg/m³ under current operating conditions. (5-15).

• **Highly Enriched Uranium**

Highly Enriched Uranium is a toxic heavy metal which emits alpha radiation at a relatively slow but steady rate. Uranium which has been enriched to more than 19.9% Uranium-235 is considered Highly Enriched and is considered weapons usable. (In its natural form, the element uranium contains only .07% Uranium-235.) The most significant dangers posed by Highly Enriched Uranium are:

- ~ its use in the production of nuclear weapons (a crude but effective bomb can be made with HEU alone);
- ~ a half life of 410,000,000 years, indicating a hazard life of more than 4 billion years;
- ~ a decay chain which includes more dangerous radioactive elements, including radon;
- ~ its pyrophoric nature; highly enriched uranium can and often does spontaneously combust when exposed to air;
- ~ its health hazards when inhaled or ingested, particularly small particles, such as metallic dust; known effects of uranium inhalation include kidney disease, bone cancer, or lung cancer. Uranium is known to cause reproductive problems and birth defects in animals.

• **Depleted uranium and natural uranium**

Depleted uranium, despite the sound of its name, maintains virtually all of the health and safety risks that adhere to natural uranium, Uranium-238. The simple difference is that depleted uranium has had most of the Uranium-235 extracted from it. Depleted uranium is used in the production of nuclear weapons and is employed by the military as armor and in munitions because of its density.

Uranium has a half life of more than 700,000,000 years, indicating a hazard life of more than 7 billion years. On its natural journey through time, uranium decays into

10

Comment No. 9 (cont.) **Issue Code: 12**

For detailed information on the CERCLA studies on Bear Creek Valley, the commentor is referred to the RI/FS for Bear Creek Valley (DOE/OR/01-1455/V1&V2 and DOE/OR/02-1525/V1&V2) available at the DOE public reading room at Oak Ridge. While all are DOE responsibility, EM Program activities are managed separate from DP waste management activities at Y-12. EM Program waste activities are currently ongoing and would continue regardless of future projects proposed for Y-12 DP missions. Waste management activities at Y-12 are discussed in Volume I, Section 3.2.2.2 and Volume II, Section A.5. In the Y-12 SWEIS, waste management activities and waste generation for 1999 are included under the No Action - Status Quo Alternative. Estimated waste generation by type and volume is presented in the No Action - Planning Basis Operations Alternative and for each of the proposed new facilities for the HEU Storage Mission and the Special Materials Mission in Chapter 5, Section 5.11 of the SWEIS.

Comment No. 10 **Issue Code: 14**

The hydrogen fluoride (HF) system is part of the Y-12 enriched uranium recovery operations that has not been restarted since the 1994 stand-down. The HF system is being checked and modified as necessary based on operational readiness reviews and requirements. Once the operational readiness review of the system is complete and appropriate approvals received, the HF system would be restarted along with the other operations associated with the enriched uranium recovery operations at Y-12. The HF system would meet all applicable safety and health requirements before it is made fully operational.

Comment No. 11 **Issue Code: 25**

The purpose of the Y-12 SWEIS is to analyze the impacts of the proposed action and alternatives (see Chapter 2 of the SWEIS). The HF system is part of the Y-12 enriched uranium recovery operations that was never restarted after the 1994 stand-down. The HF system is being checked and modified as necessary based on operational readiness reviews and requirements. Once the operational readiness review of the system is complete, the HF system will be restarted along with

other daughter products, including radon, before it comes to rest in its inert state as lead (itself a toxic metal).

Significant quantities of uranium and highly enriched uranium have been released from the Y-12 in air and water site since 1943 (approximately 50,000 kg, or 25 tons (II, D-28)).

• **Lithium**

The Y-12 SW-EIS offers little information about the use and risks associated with the presence of lithium. Lithium is a hazardous chemical which, in forms used at Y-12, poses environmental, health and safety risks. On March 31, 1999, a lithium accident resulted in an explosion (DNFSB June 10, 1999). Information about the explosion was not widely reported by DOE or the media.

The Y-12 SW-EIS says that "most" machine dust from lithium operations is collected for direct recycle salvage operations; it is silent about the remaining lithium dust. (II, A-13)

The Y-12 SW-EIS says that long-term storage is required for chemicals and pre-produced lithium hydride and lithium deuteride billets and interim storage is provided for other lithium parts—it does not say where or in what conditions this storage takes place (II, A-13).

15/14

• **Chlorinated solvents**

As with any other massive industrial site, significant quantities of industrial chemicals have been used at Y-12 over the years, including a wide array of chlorinated solvents, a large family of chemicals that contain chlorine. These include carbon tetrachloride, trichloroethylene (TCE), and methylene chloride. These solvents are used for cleaning, de-greasing, paint thinners, pesticides, resins, etc.

Exposures to chlorinated solvents can lead to short-term or long-term health effects, including dizziness, headaches, and skin rashes; long-term effects may include chronic skin problems, damage to the nervous system, kidneys and liver. Some solvents (carbon tetrachloride, for example) are known to cause cancer in either humans or animals.

Chlorinated solvents are present in groundwater on and off-site due to historic activities at the Y-12 Plant.

16/05

• **Airborne emissions**

The continued operation of the Y-12 Steam Plant (under any alternative) emits carcinogenic chemicals at levels exceeding the threshold emission values. Arsenic, beryllium and nickel are clearly released at levels exceeding the threshold values. The Y-12 SW-EIS states that Table E.3.2-1. indicates cadmium releases are higher than the threshold value as well, though the table lists the result for cadmium as FALSE (II, E-15), indicating it does not exceed the threshold value; the numbers on the table would appear to support the FALSE result.

Screening evaluation for other chemicals is presented in a confusing way as well. On page II, E-15, the Y-12 SE-EIS states that "Sixteen carcinogenic HAPS from Y-12 Site Operations are identified and presented in Table E.3.2-3. On the following page, Table E.3.2-3. is titled "Y-12 Site Screening Evaluation of Noncarcinogenic Chemical Emissions" (underline added). It appears likely that the prose description of the table is correct and the table heading incorrect. (On I, 5-35, the Y-12 SW-EIS states that "Screening was performed on 18 carcinogenic HAPs…(underline added)" and references Table E.3.2-3.

Table E.3.2-3. indicates that, in addition to the carcinogenic releases exceeding threshold values from the Steam Plant, plant operations releases "Cadmium and compounds" in quantities exceeding the threshold values

The Y-12 SW-EIS outlines the method used to calculate air emissions. OREPA has several serious concerns with the information presented on I, 5-77.

First, airborne emissions are represented by model calculations based on Y-12's materials inventory in the 1998 Hazardous Materials Inventory System report. The Y-12 SW-EIS notes earlier, however, that Y-12 was operating at 10% of its production capacity

17/07

11

Comment No. 11 (cont.) **Issue Code: 25**

the other operations associated with the enriched uranium recovery operations at Y-12. The HF system would meet all applicable safety and health requirements before it is made fully operational. The HF system was reviewed under NEPA (DOE/EA-1049) in 1995 as discussed in Section 1.4.2 of the SWEIS. The health and safety impacts associated with HF system operations are included in the No Action - Planning Basis Operations Alternative as part of the restart of the enriched uranium recovery operations at Y-12.

DOE did invite public participation and comment on the HF System EA in 1995. A notice of availability was published in the Oak Ridger, and in the Knoxville News – Sentinel. DOE received only a few comments from the public on the proposed action and EA. No public meetings were held due to lack of local public feedback and low response on the document. None of the comments received requested additional public involvement or mentioned a lack of notice to the public on the availability of the EA.

Comment No. 12 **Issue Code: 26**

The HF system is a connected action under NEPA because it meets the requirements of a connected action under 40 CFR 1508.25 (a)(1)(i)(ii) or (iii), that is, (1) trigger other actions which may require EISs; (2) cannot or will not proceed unless other actions are taken previously or simultaneously; (3) are independent parts of a larger action and depend on the larger action for their justification. The HF system was reviewed under NEPA (DOE/EA-1049) in 1995 as discussed in Section 1.4.2 of the SWEIS, and the project completed in 1998. The HF system operations health and safety impacts are included in the No Action - Planning Basis Operations Alternative as part of the restart of the enriched uranium recovery operations at Y-12. Operations impacts of the HF system are included in the overall operation impacts of the Y-12 National Security Complex reflected in the No Action - Planning Basis Operations Alternative and the alternatives for new facilities for the HEU Storage Mission and the Special Materials Mission at Y-12 in Chapter 5 of the SWEIS.