



AFL-CIO/CLC

October 13, 2006

Agency for Toxic Substances and Disease Registry
Records Center
1600 Clifton Road, NE, SM E-60
Atlanta, GA 30333

Re: **Public Health Assessment for Nuclear Fuels Services, Inc., Erwin, TN**

Dear Dr. Charp:

The enclosed comments are submitted on behalf of the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied-Industrial and Service Workers International Union, AFL-CIO/CLC (USW). We appreciate the opportunity to provide you with comments and corrections on the Public Health Assessment for Nuclear Fuels Services, Inc, in Erwin, TN. As you may know, United Steelworkers (USW) represents members who work and live in the Erwin area and whose health may be affected by this facility's past and present operations.

We hope that our comments useful and that our recommendations are seriously considered. We would appreciate your written response to our questions and concerns.

Should you have any questions or need further information, please do not hesitate to contact me at (412) 562-2519.

Respectfully submitted,

A handwritten signature in cursive script that reads 'Diane F. Heminway'.

Diane F. Heminway
Environmental Projects Coordinator
UNITED STEELWORKERS

cc: D. Niehouse, USW
B. Lanham, USW
R. Birchfield, USW 09—677

Enclosure

**Comments Submitted by United Steelworkers on
ATSDR Pubic Health Assessment for Nuclear Fuel Services, Inc., Erwin, TN
EPA Facility ID: TND003095635**

Upon review of Agency for Toxic Substances and Disease Registry's Public Health Assessment (August 28, 2006) for Nuclear Fuel Services, Inc in Erwin Tennessee, we were left with many troubling concerns. The following comments are by no means comprehensive; however, we have highlighted a number of issues and deficiencies in the assessment that we believe need to be addressed.

Failure to Include Radioactive Substances in the Assessment

It is disturbing to note that ATSDR failed to assess the public health risks associated with radioactive substances at the Nuclear Fuel Services (NFS) site, claiming a lack of legislative authority to do so under 42 USC 9601 (22). This is particularly confusing since ATSDR has included radioactive substances in Public Health Assessments (PHAs) at numerous other sites. In fact, one such site is Oak Ridge, TN (EPA Facility ID: TN18900900003), which handled many of the same substances as NSF, including special nuclear material (SNM), enriched uranium and plutonium. The Agency's most recent PHA for the Oak Ridge facility was dated November 18, 2005. The following (with emphasis added) is an excerpt from page 1 of that PHA:

*To expand on the efforts of TDOH, ATSDR scientists conducted a review and a screening analysis of TDOH's Phase I and Phase II screening-level evaluation of past exposure (1944 to 1990) to identify contaminants of concern for further evaluation. Based on this review, **ATSDR scientists are conducting public health assessments (PHAs) on the release of iodine 131, mercury releases from the Y-12 plant, PCBs, radionuclides from White Oak Creek, uranium releases from the Y-12 plant, uranium and fluoride releases from the K-25 complex, and other topics such as the Toxic Substances Control Act (TSCA) incinerator and off-site groundwater.** In conducting these PHAs, ATSDR scientists are evaluating and analyzing the information and findings from previous studies and investigations to assess the public health implications of past and current exposure. This PHA documents ATSDR's screening of recent (1990 to 2003) environmental data, addresses whether additional chemicals require further evaluation, and discusses the public health implications related to estimated exposures. Polychlorinated biphenyls (PCBs), mercury, and the groundwater pathway are not addressed in this PHA; those chemicals will be evaluated in separately released PHAs.*

Further, it is not clear that there is any legislative directive in 42 USC 9601 (22) that would prohibit ATSDR from including radioactive substances, including SNM, in their PHA of the Nuclear Fuel Services site. If there is anything in the statute that specifically precludes ATSDR from including these radioactive substances, please direct us to that text.

Neglecting to assess risk to public health from radioactive substance is particularly troubling since "ATSDR derives its authority to address environmental contaminant issues at this site from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)..."

The CERCLA Priority List of Hazardous Substances (<http://www.atsdr.cdc.gov/cercla/05list.html>) includes many of the toxic and radioactive substances likely to be associated with past and present operations at the Nuclear Fuels Services facility.

Site Description

The ATSDR report discussed the geological features of the site, acknowledging that the site is underlain by unconsolidated alluvium consisting of silts, sands, cobble and gravel. These medium typically allow rapid movement of shallow ground water. It was noted that the alluvium overlies fractured bedrock, consisting of “steeply sloping beds of shale or shale interbedded with dolomite and siltstone.” According to a state geologic map of Tennessee (<http://www.state.tn.us/environment/tdg/bigmap.shtml>), the site may also consist of limestone. While features, such as fractured bedrock mentioned in the ATSDR report clearly provide a mechanism for downward movement of ground water, limestone offers additional attributes for migration of contaminated ground water through solution channels. Unfortunately, these features, as well as nearby fault lines and runoff from the mountains, provide excellent mechanisms for rapid lateral and downward movement of contaminated groundwater and consequential migration of contaminants.

Volatile Organic Compounds (VOC) and Ground Water Contamination

Despite the fact that ATSDR’s PHA could have included numerous non-radioactive chemicals associated with NFS, the agency chose to focus on only Tetrachloroethylene (PCE) and its degradation products: Trichloroethylene (TCE) , Cis 1,2 dichloroethylene, Trans 1,2 dichloroethylene and Vinyl Chloride (VC), stating, “Since the 1970’s, NFS stopped the use of VOCs in their processes.” While the report was careful to note that the author’s use of VOC referred only to PCE and its breakdown products (including TCE), it is misleading to say that the use of this solvent ceased in the 1970s. In fact, documents on file at TN Department of Environment and Conservation (TDEC) indicate that TCE was still being used in 1987. For the sake of public trust, the report should have mentioned this fact.

Based on sampling data provided in the PHA, there was no evidence that sampling had been done for trichloroacetic acid. This is troubling since this metabolite of TCE is considered teratogenic and associated with congenital heart malformations.

While we are deeply concerned that PCE was the sole focus of ATSDR’s PHA, we are sorely disappointed that the agency neglected to mention the far-reaching potential for the public’s exposure to this chemical and its breakdown products, given the geologic makeup of the site. To add perspective to our concern, we cite former EPA Administrator Carol Browner:

“Given that a five gallon bucket of TCE spread throughout an aquifer could contaminate up to 800 million gallons of groundwater at levels above drinking water standards, leading to enormous cleanup costs, it is imperative to control and minimize such sources.”

(Excerpted from Statement of EPA Administrator Carol Browner before the House of Representatives Subcommittee on Water Resources and Environment, October 29, 1997)

While Ms Browner provided a hypothetical example, widespread contamination of TCE has been well documented across the country. One dramatic example occurred in Le Roy, NY. In Dec 1970, a train derailment caused a spill of 30,000 gallons of TCE. Volunteer firefighters responded by

flushing the area with a million gallons of water, in an effort to dilute the solvent. Twenty years later, contaminants found their way to about 40 households and businesses that required alternative water supplies, first bottled water, then water treatment systems. According to the New York State Department of Health, contaminants had spread at least 3 miles and to three counties. One well, 3 miles from the spill site had TCE levels over 120 ppb.

It is well known that PCE and TCE are a dense non-aqueous phase liquids (DNAPLs). DNAPLs are chemicals that are heavier than water and fairly insoluble in water. DNAPLs do not readily mix with water and tend to sink, finding their way, often in pure phase, through even tiny cracks in rock. Once in fractured bedrock, they can move both horizontally and vertically, making it nearly impossible to predict their path of migration, let alone remove them from geologically complex environments. Ground water studies of the site indicated a large plume of solvent contamination. In 1996-2004, it was estimated to cover 13 acres on site and an additional 5-8 acres off site toward the Nolichucky River. It is highly likely that fractured bedrock and other complex geological features at the site have provided mechanisms for extensive migration of contaminants beyond those identified in the plume. While pump and treat systems, such as the one installed at the site, are often effective in hydraulically controlling migration of contaminants, they have not proven to be effective in recovering DNAPLs that have found their way into the deeper ground water system. Therefore, it is very possible that PCE and its metabolites have already migrated far from the site, including to private and public water supplies. As was mentioned in the PHA, the city of Erwin obtains its drinking water from springs and wells and there are six public supply wells within 5 miles of NFS. There are three surface water bodies within the vicinity of NFS, including the Banner Spring Branch, Martin Creek and the Nolichucky River, as well as “ephemeral springs that rapidly appear following local rainfalls that average about 45 inches per year.” All of these water features can play a significant role in the movement of contaminants.

PCE contamination was found in the alluvial aquifer at levels exceeding 13,000 $\mu\text{g}/\text{l}$, extending beyond the west boundary of the facility in 2002. The legally enforceable limit (MCL) for PCE in drinking water is 5 $\mu\text{g}/\text{l}$. However, ATSDR neglected to explain that the maximum contaminant level goal (MCLG) for PCE is 0 $\mu\text{g}/\text{l}$. A MCLG is a level of a contaminant in drinking water below which there is no known or expected risk to health. The same MCLG of 0 $\mu\text{g}/\text{l}$ has been established for TCE and vinyl chloride, which are both breakdown products of PCE.

While 54 monitoring wells have been installed on site and 21 off-site, there are inherent problems with relying on monitoring wells to characterize DNAPL contamination. In addition to the propensity of DNAPLs to migrate through fractured rock, PCE has a tendency to form an arrowhead shaped plume in saturated zones, with Vinyl chloride at the front end of the plume. According to groundwater experts at Waterloo University, incorrect placement and depth of the wells can lead to mischaracterization of a plume. It is not unusual at CERCLA sites to place up to five monitoring wells per acre. The strategically placed wells, at varying depths, aid in determining contaminants and their movement.

However, to adequately assess and protect public health, it seems prudent to ensure that public and private water supplies are regularly tested for the full range of toxic and radioactive substances associated with past and current activities at NFS. Therefore, it was disturbing to read ATSDR's Response to Public Concerns (Appendix A of the PHA) *“If one is on a private well, ATSDR recommends that a test of the well water be performed to include not only chemical contamination but coliform contamination.”* There was no clear message to residents to have their well water tested for radioactive materials, nor was there guidance on how such tests could be obtained. Comprehensive analyses for all contaminants of concern would likely to be cost-prohibitive for most area residents, especially if they were to test periodically to ensure

consistent water quality. For these reasons, it seems appropriate for ATSDR to recommend that the State Health Department produce a fact sheet on water quality concerns, well as a establish water testing program for area residents on private wells.

Historical Activities and Releases at the Site

While the PHA noted that past and/or present industrial activities at the site involved high-enriched uranium, uranium hexafluoride, thorium and mercury, the report made no mention of a major plutonium processing project, which operated at NFS for several years until 1970. According to information gathered for and during the *Hearing on Erwin Nuclear Fuel Services before the Subcommittee on Energy Conservation and Power of the Committee on Energy and Commerce House of Representatives*, (Sept 18, 1986) plutonium disposal occurred on the plant property (page 12). Based on testimony contained in the hearing record, it is likely that plutonium contamination is widespread on plant property. While decommissioning of the interior of the building took place in the 1990's, the building itself was torn down by contractors, reportedly without proper decommissioning. It is very possible that this activity caused widespread contamination of plutonium off site through fugitive releases. There was also no mention that an incinerator was in operation at the facility for a number of years, which no doubt added to area deposition of contaminants.

The PHA report noted that NFS has had numerous NRC violations, claiming that they were a result of accounting errors and "poor documentation of chain of custody" but that "none of these violations was for actual loss of material."

In fact, "NSF has a history of significant accidental releases. In 1962, over *10 kilograms of UF₆ was released. In 1964, over 4 kilograms of UF₆ was released. In 1979, over 3 kilograms of UF₆ was released and in 1981 over 150 grams (exact amount to be determined) was released." (Source: Hearing before the Subcommittee on Energy Conservation and Power of the Committee on Energy and Commerce House of Representatives, Ninety-Ninth Congress Sept 18, 1986 Serial No, 99-178). In 1979, NSF lost 48.4 pounds of highly enriched uranium. While initially there was great concern about theft of the material, through a series of calculations based on assumptions, the NRC was able to account for all but 11.26 pounds of it by estimating how much of it had vaporized to the air, was absorbed into flooring, remained as residue or had been disposed of. (Source: Associated Press, Oct. 31, 1980, "Report Supports Theory of No Security Breach in Uranium Loss"). This long and well-documented history of "loss" of radioactive materials should have prompted ATSDR to call for a full and comprehensive Public Health Assessment, especially since material loss was attributed to environmental releases.

Health Outcome Data

ATSDR's PHA noted: "The state has limited reliable health data for this area of Tennessee."

In Oct, 1988, the National Institute of Health (NIOSH) released a report of their Health Hazard Evaluation (HHE) for Nuclear Fuel Services. The HHE investigators found that "Several health problems related to kidney disease are unusually common in both NFS workers and in dairy workers from a nearby plant" and suggested that the health problems "apparently reflect[ed] a regional rather than an occupational problem." The report recommended further study "to understand and prevent kidney problems in the region."

* Due to poor quality of copy, the exact number is not legible and could be more than 10 kilograms.

Curiously, the NIOSH HHE was not listed in ATSDR's list of references, nor was it mentioned in their Public Health Assessment (PHA).

Workers and local residents have openly shared their health concerns with ATSDR and are convinced that the community has, for some time, experienced a high rate of specific cancers (lung, bone, liver, kidney and skin), as well as an increased incidence of multiple sclerosis, birth defects and kidney disease.

Despite the well-documented toxic and radioactive contamination issues associated with this site, as well as the antidotal information provided, it seems outrageous that ATSDR would rank this site as: **“No Apparent Public Health Hazard.”** The absence of data does not justify this ranking without strong recommendations for a full-scale epidemiological study of the workers and the community.

Since there are serious gaps in scientific knowledge about toxicity, bioavailability, exposure, and synergistic interaction effects, we recognize that is impossible to accurately assess the full impacts that toxic and radioactive substances are having on public health. However, we are disturbed that ATSDR's PHA seemed intentionally limited in scope and did not include all relevant, available data. Therefore, we strongly urge ATSDR to revise their recommendations and call for a comprehensive health action plan that will truly assess the health risks of those who may be affected by historic releases from the NFS facility.