

*NIRS MEMO to Tennessee Dept of Environment and Conservation Solid Waste Advisory Committee charged by state legislature with reviewing nuclear waste going into the Middle Point landfill in Murfreesboro, TN.*

**Nuclear Information and Resource Service  
6930 Carroll Avenue #340  
Takoma Park, MD 20912  
301 270-NIRS; 301-270-6477  
www.nirs.org**

Date: July 24, 2007

Memo to: Members of the TDEC Solid Waste Advisory Committee

From: Diane D'Arrigo, Nuclear Information and Resource Service, coauthor of *Out of Control – On Purpose: The DOE's Dispersal of Radioactive Waste into Landfills and Consumer Products*; [dianed@nirs.org](mailto:dianed@nirs.org); 301-270-6477 x 16.

RE: Your study of radioactive waste going to unregulated disposal in TN

YOUR CHARGE is to advise on whether to continue the moratorium on radioactive materials or resume disposing of them in the Middle Point landfill. It makes sense to consider this same question for all the state's landfills including the other 4- Carters Valley, Chestnut Ridge, North and South Shelby- that have also been receiving radioactive wastes from nuclear power and related industries. How much economic benefit is there and who receives that benefit? The nuclear waste generators and processors? How much do the landfill operators and communities benefit? What if the predictions are wrong and radioactivity mixes with solvents and other hazardous materials leaking from many landfills? Who pays the price? Who is liable if the state has willingly accepted these wastes? Is TDEC helping the nuclear waste generators be excused from liability for the waste they generate? What are the synergistic effects and accelerated migration dangers of radioactive wastes in solid waste landfills where solvents and other special wastes are disposed? Can all of the necessary questions be answered in less than 60 days? Are there members of this panel with pre-existing positions favoring nuclear waste deregulation or free release? What level of objectivity will you require of your contractor?

WHAT IS SO-CALLED "LOW-LEVEL" RADIOACTIVE WASTE?

The definition of "Low-Level" Radioactive Waste essentially includes all radioactive waste generated that is not high level radioactive waste (defined as irradiated fuel, liquid and sludge from reprocessing and the solid to which that is converted). The same radioactive elements are in high level and so-called "low-level" radioactive waste and the newly created category of very low level radioactive waste (an effort to deregulate waste without public knowledge) can also have these same long-lasting, biologically active radioactive elements such as plutonium, cesium, strontium and radioiodines, just in lower

concentrations. True there is not legally a lower cutoff but there need not be. In fact federal agencies have tried for decades to choose a lower cutoff level but the public and landfill, metal and nuclear workers, some local and state governments oppose such releases of nuclear waste. Congress revoked the Nuclear Regulatory Commission's (NRC) policies that would have declared some radioactive waste "below regulatory control" and has delayed or cancelled at least two or three rulemakings on setting that level since. The Environmental Protection Agency (EPA) has several times considered and retreated from setting levels for recycling radioactive metal and other materials into commerce and on sending nuclear waste to solid and hazardous waste landfills. At the behest of the nuclear power industry, the NRC has begun exploiting a loophole in its own regulations for alternative methods of disposal (10 CFR 20.2002), which TDEC is now using to justify removing control over radioactive wastes. Both NRC and TDEC have been permitting dispersal of radioactive wastes without public knowledge or scrutiny.

Over a dozen states passed laws or regulations requiring continued regulatory control over nuclear waste even if the federal government or other states deregulate or declare it below regulatory concern. It is still a regulatory concern in those states.

The radioactivity generated by nuclear power, weapons and the fuel chain to produce them is not natural—it is industrial and government radioactive waste (some of the radionuclides produced never existed on Earth until splitting of the atom) and needs to be isolated as such. Simply because some ionizing radioactivity already exists in nature or was released from nuclear activities in the past at similar levels or concentrations does not justify *unnecessary* addition of radioactivity into the environment, water or air via landfills or other mechanisms. The radioactivity generated and being dumped in Tennessee landfills includes some very long-lasting radionuclides such as plutonium 239 which will be radiologically dangerous for a quarter to a half million years. Strontium 90 and Cesium 137 remain hazardous for 300 to 600 years, well beyond the life expectancy of any landfill liner. Some of these manmade radionuclides are more biologically active and dangerous than some of the naturally occurring radionuclides.

Naturally occurring radioactive materials can pose health risks thus releasing man-made radioactive materials at equal or portions of those levels are not justified. It only compounds the truly unavoidable risks from naturally occurring radioactivity. According to the risks numbers of the National Academy of Sciences and US EPA 1 in 50 of us will get cancer due to existing background radiation over our lifetimes. So why add to the 100 or 300 or 360 millirems government agencies calculate we receive annually? If the addition is, as TDEC reported to you at a previous meeting, lost in the fluctuation or natural variation of background levels, how can they be so sure it really is as low as they are claiming?

Tennessee allows nuclear waste processors to bring in large amounts of nuclear waste from nuclear power and weapons facilities across the country and some from international sources. That amount is likely to increase in the years to come, especially in mid-2008 when the nuclear waste site at Barnwell, South Carolina stops taking radioactive waste from outside its compact (nuclear waste generators in SC, NJ and CT).

TDEC-licensed processors could receive even more waste to process and disperse or dilute to facilities without radioactive licenses such as the landfills. This should be considered in planning for future amounts of nuclear waste expected at Middle Point and all of the Tennessee landfills.

#### A MILLIREM CANNOT BE MEASURED, VERIFIED OR ENFORCED

How do the 5 landfills taking nuclear BSFR waste show that they are only dosing members of the public with one millirem a year? They can't. They can run elaborate computer analysis with dozens of questionable assumptions and secret equations underlying those assumptions to claim that a millirem a year is the most anyone will receive, but a millirem cannot be measured—only calculated—and the calculations are being done by those generating the waste and permitting its disposal, both benefiting economically from the practice. Furthermore the claim is made that more and more radioactive loads can be disposed and the landfill still will give off only one millirem year. The calculations have been done in the past to permit each contract to give a millirem but then we are told that multiple contracts will not increase in the dose to members of the public now or in the future. Sure some of the assumptions are cautious but others are not. And we have no way to know the calculations are correct.

#### RESRAD CODE DOES NOT GUARANTEE SET DOSES NO EVIDENCE IT HAS BEEN VALIDATED OR VERIFIED

Validation means the numbers and calculations in the code are correct or valid. Verification means showing that the projected doses and dose rates are what people really receive.

The RESRAD Computer Code --the code that is used to project the doses from given amounts of radioactivity buried in a landfill-- has NOT been verified or validated, despite this assertion made by TDEC staff on July 5, 2007.

This committee should obtain, review and make public the documentation of any and all verification and validation that have been done for the RESRAD code for BURIAL of radioactive waste. Our research and direct request for this information from the developers of the computer code have revealed no verification or validation as of May 2007.

There WERE efforts to verify the RESRAD RECYCLE Computer Code, a different code that is used to allow recycling of radioactive metal into everyday consumer goods but it was not carried out for buried radioactive waste. In addition, its conclusions were highly questionable.

#### UNDERLYING EQUATIONS ARE SECRET DESPITE TAXPAYER FUNDING

The RESRAD Code was developed using US tax dollars by DOE Argonne Labs specifically to give the impression that calculation of radiation doses was possible at sites

where nuclear waste was left in place, where contaminated property was released for reuse or where radioactive waste was disposed in regular landfills. The underlying equations used by the code have been kept secret. The public has not been permitted to review them, despite requests from technically independent and competent researchers.

TENNESSEE GIVES SEVERAL “FREE RELEASE” LICENSES BUT ONLY A FEW ARE BSFR. The other Free Release licenses remove nuclear materials from control but not to landfills. This is a correction on NIRS original description of BSFR in our report.

A major concern raised in our report, “Out of Control – On Purpose” [<http://www.nirs.org/radwaste/outofcontrol/outofcontrolreport.pdf>] is that radioactive waste is being removed from controls and deliberately dispersed to unregulated or controlled destinations...landfills, incinerators, recycling into consumer goods, reuse via sales or donation, without warning.

TDEC Division of Radiological Health gives over two dozen kinds of radioactive materials licenses and several of those are for “Free Release” of radioactive materials as if not radioactive. These include:

- Decontamination for Free Release*
- Survey for Free Release using Regulatory Guide 1.86 (surface contamination levels)*
- Volumetric Free Release*
- Free Release of Lead*
- Free Release of Soil and Other Bulk Materials*
- Free Release of Equipment*
- Free Release of Concrete and Asphalt*

We inadvertently identified all of these Free Release license types as Bulk Survey for Free Release BSFR in the report but upon later clarification we have been notified by TDEC that NOT ALL FREE RELEASE licenses are in the BSFR category. The other free release licenses are being issued but they are not called BSFR.

BSFR includes only Free Release to Landfills so it includes:

- Volumetric Free Release (to landfills)*
- Free Release of Soil and Other Bulk Materials*
- Free Release of Concrete and Asphalt*

The other Free Releases of radioactive wastes and materials must result in their going to places other than landfills...raising interesting questions about their destinations— Incinerators? Recyclers? Reuse? Are recipients notified? Are they used to make consumer goods or generate other nuclear wastes that end up in landfills?

In addition, we now understand that there are other “license approved sampling protocols” that may be used to allow radioactive asphalt and concrete to go to a landfill –

protocols not listed as BSFR. The question arises then about whether TDEC allows nuclear waste into other landfills not listed as taking BSFR under other mechanisms...how many and how much?

We maintain our concerns about Tennessee Department of Environment and Conservation's role in free releasing nuclear waste to unregulated destinations especially those identified as receiving it and encourage the committee to fully evaluate the issue, make the moratorium permanent and expand it to all the landfills and solid waste facilities in the state.

Finally we support an extension on the public comment period so members of the affected public just learning about the issue can provide input. The waste generators and waste disposal facilities had time and an extension on their comment period to comment on the BSFR program but the general public was not afforded that opportunity.

Nuclear Information and Resource Service would be glad to provide further information, clarification and references upon request of the committee.