

WIPP's

Surprise Waste Problem

Last year did not turn out as planned at the Waste Isolation Pilot Plant (WIPP), the world's first and only operating nuclear waste repository (*Voices from the Earth*, Summer 2009). Although funding was at the highest levels ever, WIPP again missed its performance goals regarding the amount of plutonium-contaminated transuranic (TRU) waste shipped and disposed, the request for major changes in the operating permit was rejected, and approval by the Environmental Protection Agency (EPA) of the recertification application was delayed. In addition, there was a totally unexpected problem in the rising level of carbon tetrachloride, a cancer-causing chemical, in the air. The chemical could require closing one underground waste room before it is filled and affect future shipments. One "solution" requested by WIPP officials is simply to raise the allowed amount of the solvent by almost ten times. That request was reinforced by WIPP officials stating that millions of dollars of American Recovery and Reinvestment Act (ARRA) funds could be taken away if shipments with high amounts of carbon tetrachloride were suspended. Also this year, the EPA process to recertify WIPP may be further delayed by changing plans for what to do with some of the nation's surplus plutonium from nuclear weapons. Furthermore, with the formation of the Blue Ribbon Commission on America's Nuclear Future (see pages 8-9), WIPP again is being touted by some as a possible site for high-level waste and irradiated fuel from nuclear power plants.

WHAT TO DO ABOUT CARBON TETRACHLORIDE?

On July 24, 2009, WIPP officials sent a notice to the New Mexico Environment Department (NMED) that air sampling showed that carbon tetrachloride (CT) was above the "concentration of concern" of 165 parts per billion volume (ppbv). The levels for CT and eight other chemical compounds were established in the operating permit



Idaho National Laboratory (INL) personnel scan drums destined for WIPP.



A Remote-Handled transuranic (TRU) waste shipment travels to the Waste Isolation Pilot Plant (WIPP).

issued by NMED in October 1999. While the presence of those chemicals in the waste was well known, it was not expected that those levels would be exceeded or that the required notification to NMED would occur.

Additional CT exceedances were reported in September and October, but there was no apparent action to find out the source of the rising CT levels or reduce them. That lackadaisical attitude started to change on November 17, 2009, when WIPP officials submitted corrected information about the air sampling program. The previous data had under-reported the amounts of CT by about 40 percent because the amount of air flowing through the underground was incorrectly calculated. The corrected data showed that on December 23, 2008, CT levels were 315 ppbv and that other previously unreported exceedances occurred in January, April, and June, 2009. More importantly for WIPP operations, the corrected amounts showed that the running annual average (RAA) for CT was 93 ppbv. The permit requires that if the RAA



WIPP waste handling building.

The November 17, 2009, letter also stated: "the main contribution of carbon tetrachloride appears to be from wastes in filled panels (Panels 3 and 4). Therefore, the Permittees have been taking actions to reduce VOC emission from those panels." Additional notices to NMED in mid-December continued to show exceedances and the RAA rising to 105 ppbv. On December 23, 2009, Southwest Research and Information Center (SRIC) wrote to the WIPP Site Manager, asking for public discussion about the matter and advocating three actions: 1) suspend shipments of waste streams with significant levels of CT, 2) fully inform underground workers of the CT levels and encourage them to report any symptoms, and 3) strongly consider emplacing 12-foot thick explosion/isolation walls in Panels 3 and 4. Those walls were emplaced in Panels 1 and 2, but, at WIPP's request, have not yet been installed in additional panels because site officials hope to reduce the expense by using bulkheads instead.

A January 14, 2010, letter from the WIPP Manager to SRIC identified two waste streams of contact-handled (CH) waste as the source of the CT and stated that "greater than 80 percent" of the suspect waste drums are in Panels 4 and 5, the latter now being filled. SRIC responded the next day requesting a meeting with knowledgeable technical officials. SRIC also objected to the refusal to suspend waste shipments of the suspect waste streams and reiterated the request. The SRIC letter also noted that there are more than 10,000 drums from the two waste streams still at the Idaho National Laboratory (INL), so that measures should be developed to reduce the amounts of CT before shipment. That letter pointed out that WIPP officials seemed to not fully understand the problem since the major source of CT emissions changed between the November 17, 2009, and January 14, 2010

WIPP letters. SRIC also reiterated the need to consider emplacing the explosion/isolation walls in Panel 3 and 4, which was not addressed in the WIPP response.

The technical meeting occurred on February 24, and WIPP officials said that they now considered portions of three waste streams to be the CT source. They stated that shipments of those waste streams had been suspended in early February (after additional drums were shipped in January). They wanted to resume those waste shipments, which are funded by Recovery Act (or stimulus) funds that are to be used by September 30, 2011. WIPP officials also said that they had installed a granulated activated carbon filter system at Panel 4 to capture some of the CT, and applied better sealing to the bulkheads in Panels

exceeds 165 ppbv, WIPP "shall cease disposal in the active disposal room and install ventilation barriers" specified in the permit. That mandatory action would be followed six months later, if the RAA did not fall below that level, by closing the panel of seven rooms then being used. Thus, a significant amount of planned waste emplacement capacity at WIPP could be closed before it is filled.



Argonne National Laboratory West, which is part of Idaho National Laboratory, ships waste to WIPP.

3 and 4 and the filled rooms in Panel 5. They also were considering asking for the CT level to be raised because such an increase would not affect public health risk. On March 30, two requests were filed with NMED — a permit modification request to increase the CT level to 630 ppbv and a temporary authorization so that the changed levels go into effect immediately, during the 60-day comment period and before a final decision on the modification request is made by NMED. On April 1, NMED granted the temporary authorization with two additional requirements — prohibiting five high CT waste streams from being shipped and stating that the decision could be reversed if the modification request was not approved. Those actions were intended to prevent prejudice to the public comment period.

On April 7, WIPP officials wrote NMED asking for the temporary authorization to be “amended” to eliminate the prohibition on shipping the high CT waste streams, and to allow those shipments if the containers are overpacked to lessen the amount of CT released. A major rationale for the amendment was that “prohibiting shipments... will reduce CH TRU waste shipments by approximately 10 shipments per week. This 33 percent reduction will result in a corresponding withdrawal of the resources that DOE has targeted for the WIPP to responsibly utilize stimulus funds.” On April 8, SRIC wrote to Dr. Inés Triay, DOE Assistant Secretary of Environmental Management (EM) in Washington, DC, asking that the amendment request be withdrawn because “the regulations do not provide for a request to amend a temporary authorization.” SRIC also requested additional information about ARRA funds, since they are not to be used to change regulatory requirements and because EM officials had previously said that ARRA funds were not being used for CT shipments. The SRIC letter also requested that the effects of the explosion/isolation wall be discussed. That letter also stated that “the current situation is symptomatic of a larger performance problem at WIPP” over the past four years. During that time amounts of waste disposed at WIPP have dropped 40 percent from the levels in 2006, even as funding increased and permit modifications had been approved which were to accommodate increased shipments.

On April 12, WIPP officials submitted a new permit modification request and withdrew the previous modification request and the request to amend the April 1 temporary authorization. They also requested a new temporary authorization to raise the CT concentration of concern to 630 ppbv. The new permit modification requested raising the CT concentration of concern to 1,660 ppbv. That much higher level was said to be justified by a March 31, 2010, change by the EPA in the calculated risk of CT, which raises by approximately 2.5 times the amount of CT calculated to cause a similar health risk. In addition to raising the CT level by 2.5 times, the modification request says that additional increases are justified by “reapportioning the risk” from all volatile organic compounds coming to WIPP.

On April 14, NMED approved the new temporary authorization request with two additional requirements — limiting the timeframe until the final decision on the permit modification and requiring that any shipments of the five high CT waste streams be in overpacked containers.

MUCH MORE PLUTONIUM COMING TO WIPP?

On February 22, 2010, Savannah River Site (SRS) officials announced that they would issue a revised Notice of Intent for an environmental impact statement (EIS) on Surplus Plutonium Disposition at SRS to include a new alternative — disposal of five metric tons of plutonium at WIPP. Such an increase could approximately double the amount of plutonium at WIPP, even

though the current inventory is almost at the legal limit of 175,564 cubic meters of TRU waste.

EPA RECERTIFICATION

The WIPP Land Withdrawal Act of 1992 (LWA) provides that before the site could open, EPA must certify that it meets standards to limit projected radioactive releases over the 10,000 years after all waste is disposed. Every five years during its operations, WIPP must submit a recertification application showing continued compliance with the standards. The law also provides that EPA’s recertification review would take six months.

However, the first recertification in 2004 took two years and was highly contentious because the application included high-level wastes at the Hanford, WA site that

retrieved and removed from the site prior to decommissioning of the WIPP facility.” As part of the settlement of the state’s legal challenge of that decision, DOE agreed that “If not required by federal laws or regulations existing at the time, the Department of Energy shall, nevertheless, provide to the State of New Mexico and the public, a reasonable review period prior to any decision to change the nature or scope of the WIPP project to that of a permanent, high level waste repository, or a decision not to retrieve the high level waste placed in the repository on a temporary basis which high level waste the Department of Energy intends to remove at the conclusion of the experimental period of approximately thirty (30) years in duration.” As part of an additional legal agreement in 1984, DOE stated that “WIPP is not

designed for the permanent disposal of high-level waste, nor has the WIPP site itself been characterized for such permanent disposal.”

The WIPP Land Withdrawal Act of 1992 specifically bans high-level radioactive waste and irradiated fuel at WIPP: “The [DOE] Secretary shall not transport high-level radioactive waste or spent nuclear fuel to WIPP or emplace or dispose of such waste or fuel at WIPP.” Numerous DOE documents over the past 30 years have reiterated that WIPP is only for defense transuranic waste. Breaking those laws and promises would certainly renew the very substantial opposition in New Mexico to high-level waste or irradiated fuel storage or disposal in the state.

On technical grounds, the WIPP site and surrounding area are inappropriate for high-level waste or irradiated fuel disposal. That region is a major oil and natural gas production area. There are literally hundreds of oil and gas wells surrounding the WIPP site and there are proven reserves underneath the waste rooms. Thus, the possibility of drilling into TRU waste rooms exists, and high-level wastes and irradiated fuel would have to be emplaced even closer to those wells. Using a deeper horizon for such wastes would be near a proven underground brine reservoir that flowed to the surface when it was penetrated in 1981. That reservoir resulted in the WIPP rooms being re-oriented to the south to make them farther away from the reservoir. In 1978, EPA and U.S. Geological Survey (USGS) studies raised significant concerns about salt disposal for high-level waste and irradiated fuel. The concerns

related to the fact that salt would likely corrode any waste containers and the heat-generation of the waste that would likely attract the relatively small amounts of water in the salt. Further, salt does not readily adsorb radionuclides, which means that they could move through the brine water.

On practical grounds, the WIPP waste handling buildings and transportation system could not safely handle the heavy weight, heat-generating, high radioactivity of high-level waste and irradiated fuel. Thus, totally new structures would have to be built.

For more than 30 years, public meetings and polling have shown that New Mexicans are strongly opposed to high-level wastes and irradiated fuel. Even former Senator Pete Domenici, a fervent supporter of nuclear power and WIPP, has stated repeatedly since 1983 that he would oppose high-level waste or spent fuel at WIPP. 🦋



Location of oil and natural gas wells surrounding the WIPP site.

LWA clearly prohibits at WIPP. The most current WIPP waste inventory does not include that additional SRS plutonium, which could further complicate and delay the recertification.

HIGH-LEVEL WASTE AT WIPP?

At the first meeting of the Blue Ribbon Commission on March 25 and 26, WIPP was mentioned several times. The decision by the Obama administration not to proceed with the proposed Yucca Mountain, Nevada site as a repository for high-level waste and irradiated fuel from commercial nuclear reactors means that there is no disposal site under consideration. Once again, some people say that since WIPP is the only repository, it could be considered for an expanded mission.

There are policy, technical, and practical reasons that WIPP should not be considered for high level waste or commercial irradiated fuel. From a policy standpoint, WIPP has been excluded from consideration as such a disposal site since it was first authorized by Congress in 1979, and that decision has been reiterated frequently since then. Prior to 1979, there were discussions about bringing such wastes to WIPP. The first, mid-1970s design included waste disposal at two underground horizons at 2,150 feet below the surface (the level now being used) and at 2,650 feet below the surface. On January 22, 1981, the Reagan administration DOE decided to proceed with WIPP for TRU waste disposal and for experiments with “small volumes of defense high-level waste. The high-level waste used for experiments will be

FOR MORE INFORMATION

WIPP website: www.wipp.energy.gov

EPA WIPP website: www.epa.gov/radiation/wipp/index.html

NMED WIPP website: www.nmenv.state.nm.us/wipp/index.html

SRIC website: www.sric.org