

Sound solution?

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CAÑON CITY - Radioactive, contaminated, Superfund waste.

Such terms, all accurate, describe the 470,000 tons of waste from Maywood, N.J., that Cotter would like to bring to Canon City to use as cover material for waste impoundments at the mill south of town.

Colorado Department of Health and Environment officials, the Nuclear Regulatory Commission, Department of Energy, Environmental Protection Agency and Army Corps of Engineers all have deemed soil from the Maywood Superfund site to be appropriate for disposal in the Cotter Corporation mill tailings impoundments. Yet opponents are not convinced that the soil is safe for disposal there, or even that the soil was properly tested.

The majority of the Superfund dirt came directly from processing at the Maywood Chemical Co., which fabricated lantern mantels using the radioactive element thorium between 1916 and 1956.

Technically, because of its history, the contaminated soil has been classified under section 11e(2) of the Atomic Energy Act as "byproduct material" that is generated by mining and milling of ores containing uranium and thorium.

Cotter is licensed to handle such material.

"In general, 11e(2) material is low-(radio)activity material compared to low-level waste and high-level waste," Jan Johnson, an environmental consultant and member of Colorado's Radiation Advisory Committee, told Colorado lawmakers during hearings on the issue in April.

"The Cotter site is designed to take this material," she said. "It's designed to handle higher level (radioactive) materials than Maywood. And the Cotter site will have a long-term custodian - the tailings pads will be deeded to the federal government."

Because it is defined as 11e(2) waste, the Maywood material cannot be disposed of in low-level or high-level waste dumps. And according to Johnson's testimony to legislators, there's a good reason for that.

"You shouldn't take up valuable space in low-level radioactive waste sites with material that's very much lower level and poses very little risk," she said.

Johnson said that the Maywood material can actually be used in a beneficial way. "It can reduce radioactive risk," she said, by serving as a cap to the more radioactive uranium



Sharyn Cunningham, left, and Jeri Fry are co chairs of Colorado Citizens Against ToxicWaste. Daily Record News Group/Jeff Haller



Barrels of tainted soil wait to be shipped to Utah at a chemical Superfund site in Maywood, N.J. Some of the soil will be shipped to Cañon City for disposal.

Photo courtesy of The Bergen County, N.J., Record

tailings already in the tailings impoundments.

Pat Teegarten, an attorney representing Cotter, told lawmakers it would actually "improve the quality of the soils out there."

But other hazardous substances, some of them proven carcinogens, also have shown up in the Maywood soil. Some came from the Maywood Chemical Co., others from the Stepan Chemical Co., which bought the Maywood plant in 1959 and manufactured a number of chemicals there, including additives for soap and deodorants.

And residents who live in Cañon City, especially those in the Lincoln Park area that was already polluted by Cotter, are concerned about the possibility of the nearby mill becoming a dump for additional types of waste.

"The Maywood soil has chemicals in it, but they keep telling us there's not," said Sharyn Cunningham, president of the activist group Colorado Citizens Against ToxicWaste, which formed to protest the Maywood soils. "They keep saying that it's just thorium in the dirt.

"It leaves you with the impression that thorium is all they ever did at the factory, but that's far from it," she said, pointing out that the EPA describes the plant manufacturing chemicals used in pharmaceuticals, food additives, and soap and detergents.

Cunningham, who lives on land with two wells contaminated by uranium and molybdenum from Cotter, said the thorium residue is bad enough, but the other chemicals make the shipment a huge risk.

"It scares the hell out of me," she said. "God knows what else is in there."

Radioactive and chemical contaminants

According to the Army Corps of Engineers, which is responsible for the Maywood cleanup under the Formerly Utilized Sites Remedial Action Program, or FUSRAP, the major contaminant in the dirt proposed for shipment to Cotter is residual amounts of thorium-232.

"Radiological analysis of over 3,000 samples indicates widespread contamination of radium-226, thorium-232 and uranium-238," according to an April 1993 Baseline Risk Assessment of the Maywood site conducted for the Corps.

Waste and tailings from the chemical company's lantern production ended up not only dumped in lagoons on-site, but also spread across the surrounding area by streams that flowed through the property. Some of the Maywood material was also used as both mulch and grading material on nearby residential and commercial properties, and it was spread around the area further by construction.

Measurements have detected thorium-232 radiation ranging from background levels - approximately 1 to 2 picocuries

per gram of soil - to 1,699 picocuries per gram. They also found uranium-238 up to 625 picocuries per gram, and radium-226 from background levels to 447 picocuries per gram.

"The sites have been characterized extensively by both the Department of Energy and the Army Corps of Engineers," said Angela Carpenter, the EPA's remedial project manager for the Maywood site. "And in general, the radiological risk far outranks the chemical risks."

The several million tons of tailings already in Cotter's impoundments emit radiation in ranges from 3,000 to 4,000 picocuries per gram of soil, most of it attributable to residual radium and thorium, according to Jake Jacobi, the head of the Colorado health department's radiation services program.

Background radiation levels in and around Cañon City range from less than 1 picocurie per gram to around 7 picocuries per gram, due mainly to naturally occurring uranium and radium deposits, Jacobi said.

What worries CCAT, however, is that while Cotter might have been built to handle the radioactive tailings, it wasn't designed for chemical wastes, minimal or not.

"It was never intended for things like hazardous chemicals," Cunningham said.

Cotter has already faced one instance of just what Cunningham fears.

According to EPA documents, prior to its 1988 shutdown, the mill accepted and processed a shipment of unspecified waste ore that was contaminated with PCBs, a now-banned coolant and lubricant. Contamination spread to other parts of the mill property and had to be extracted from polluted soil.

Health risks of chemicals

According to Carpenter, the bulk of the chemicals at the Maywood site - which comprise 88 residential and commercial properties, the Stepan Chemical property and the 11-acre Department of Energy-owned Maywood Interim Storage Site - are volatile organic compounds such as benzene, toluene and xylene.

Those chemicals, she said, have mostly "volatilized" off the soil or leached into groundwater, where they are still found in higher concentrations.

"These were all common fuel components and solvents that had widespread use throughout '60s and '70s," Carpenter said.

Chemical analysis included in the 1993 Baseline Risk Assessment of the Maywood site, which consisted of 118 samples taken from 44 bore holes, identified 36 "contaminants of concern" occurring in the soil. They

consisted of seven heavy metals, six volatile organic compounds and 23 other bases, acids and pesticides.

Two of the heavy metals, arsenic and chromium, are classified as carcinogenic, as are two of the organics and all but two of the other chemicals.

But according to Army Corps risk assessment, the potential cancer risk, even for someone living at a future residence built on the Maywood site or regularly visiting a hypothetical park, would be negligible.

The contaminants do not occur in substantial enough quantities to trigger hazardous waste regulations.

"It is correct to say that there is chemical contamination within the radioactive contamination," acknowledged Allen Roos, the Maywood project manager for the Army Corps. "Chemical contamination has been detected. However, it's not considered hazardous. It's not at levels hazardous enough to make it considered a mixed waste," which Cotter is not authorized to receive.

In a separate November 1994 remedial investigation, an EPA contractor took 126 samples from 44 bore holes on just the Stepan Chemical and several commercial properties. That study detected 81 chemical contaminants classified in six categories: volatile organic compounds such as solvents, aromatic hydrocarbons, pesticides, heavy metals, gasoline and oil, and ether oils.

This, said Roos, is where much of the confusion about Maywood arises.

Although Stepan and some of the commercial properties are part of the Maywood Superfund site, the lead agency for the cleanup of their non-radiological contamination is the EPA, not the Army Corps of Engineers, which operates under a separate remedial investigation.

"The sites overlap, but not 100 percent," said the EPA's Carpenter. "It's definitely not the case that you can view this cleanup as one unit."

According to the EPA's remedial investigation, only two volatile compounds, xylene and benzene, exceeded New Jersey residential soil cleanup standards. Xylene measured at 120 parts per million and benzene measured at 81 ppm. Five metals in the Stepan soil - arsenic, cadmium, chromium, lead and mercury - also exceeded the cleanup limits.

But according to Steve Landau, Cotter's environmental affairs manager, Cañon City will not receive any contaminated material from the Stepan and commercial properties. That waste will be cleaned up later and "shipped to an entirely different facility," he told Cañon City residents at a community meeting on the Maywood issue in May.

As for the other Maywood material proposed for shipment to Cotter, Landau said it does not contain hazardous chemicals.

"The testing that has been done on the material for chemicals doesn't show them to be present and cause the material to become hazardous waste," he said.

Landau also said even if it were approved, accepting any tailings tainted with hazardous chemicals could jeopardize Cotter's ability to turn the plant site over to the Department of Energy when it is decommissioned in the distant future.

Such assurances - either from the company or the government - don't calm the fears of anti-Maywood activists such as Jeri Fry, a member of CCAT and daughter of the late Lynn Boughton, Cotter's chief chemist for 21 years.

All the soil testing and sampling in the world isn't enough, she said, to prevent mistakes and lapses.

"If you look at the tailings there with eyes that only see radiation, then that's all you see," she said.

The federal Agency for Toxic Substances and Disease Registry provides the evidence to support her statement. The registry determined that the Department of Energy wasn't even testing for all the right radioactive elements when it began characterizing the Maywood site.

Even armed with an extensive history of the site, the DOE initially tested the soil for radon-222, a decay product of uranium, which was never the main focus of manufacturing at the Maywood plant. The DOE revised its sampling program only after the registry recommended that it sample for radon-220, the decay product for thorium-232.

Which agency does what?

Under an agreement between the EPA and the Nuclear Regulatory Commission, the NRC has authority for so-called 11e(2) uranium and thorium tailings, even those tainted with minimal amounts of other chemical wastes.

"It was contemplated that the impoundments the NRC designed would be able to handle that kind of stuff," said Tom Burns, the management unit chief for the EPA's solid and hazardous waste program in Region 8, which includes Colorado.

Unless a chemical is specifically defined as hazardous under the Resource Conservation and Recovery Act, which governs hazardous waste from cradle to grave, the EPA's responsibility and involvement in handling the material is limited.

"We defer to the NRC authority to cover it," said Burns.

EPA does get involved when a facility such as Cotter is identified as a possible recipient of Superfund material, but only in the sense of ensuring that there are no violations or other problems that would preclude the site from taking in the waste.

"We don't look at whether this is the right waste to go into this facility," said Terry Brown, the EPA's off-site rules

coordinator for Region 8. "Our involvement is in determining whether Cotter is in compliance under their license and whether they have any releases into the environment."

Cotter requested and received approval from the EPA to accept 11e(2) waste for disposal into its tailings in August 2000.

"Currently, Cotter can accept (Superfund) waste directly into their primary and secondary impoundment units," said Brown. "From our position, once we determine that a unit is acceptable based on its status and release history, we basically defer to the primary regulatory authority, in this case the state health department."

Because the approval only applies to Cotter's tailings impoundment, Brown said, the Maywood material must technically be loaded off railcars directly into the tailings ponds because storage pads and processing facilities are not permitted for Superfund waste.

According to Ken Weaver, a health physicist with the Colorado Department of Public Health and Environment's radiation services program, by their nature, uranium and thorium tailings contain heavy metals and chemicals used in the extraction process.

Even though hazardous waste criteria don't apply to the Maywood soil because it is defined as 11e(2) material, Weaver said the state still "closely examined data" from sampling "in part, due to expressed concern that chemicals from Stepan Chemical Co. might have been mixed with the thorium tailings."

He said an April 2002 waste profile from Stone & Webster, the contractor cleaning up the Maywood site, "confirms that few trace inorganic metals or organic chemicals are present" in the first 40,000 cubic yards proposed for shipment to Cotter.

"All the results are non-detects, in background range or a minor fraction of criteria relevant for comparison," he said.

Weaver also was confident that the original soil tainted with thorium is not mingled with chemically-laden dirt from the Stepan property.

"Stepan Chemical is not in the units that are being cleaned up right now," he said. "The thorium process had its own independent tailings location. The stockpile is separate."

And if there are any doubts about hazardous chemicals tainting the Maywood soil, Weaver said the state health department has the prerogative to require samples for its own testing.

"The department's laboratory is fully capable of analyzing for both radiological and non-radiological constituents," he said.

According to the Army Corps' Roos, even though there has

already been extensive sampling of the Maywood soil, the most critical soil analysis will not happen until the material is ready for shipment.

"Really, the idea behind sampling is just to characterize the soil and get an idea of what's out there," he said. "We have a range of chemicals we have to test for, and we want to be sure that what we're saying is in there is actually in there."

"Before we would dispose of that material it will be tested again to meet the waste acceptance criteria."

Li Tungsten material

In July, Cotter also asked EPA to declare three of its ore storage pads and its chemical circuits as acceptable for processing Superfund waste - contaminated with uranium - from a site on Long Island.

Brown said it was too early to say whether Cotter's current violations will affect the company's request.

"Our sense is that a lot of the violations are in the worker health and safety area, and that's not really in our purview," he said. "We're mainly concerned with off-site impacts on public health and the environment."

Still, Brown said, because of the past problems at Cotter, "we'll want to take a close, serious look at the issues in the Notice of Violation."

According to Ed Als, a remedial project manager for the EPA's Region 2 office in New York City, the agency has determined that the so-called Li Tungsten material shouldn't be regulated as a hazardous waste.

"I would certainly characterize it as low level," he said. "What we have out there ranges from 30 to 50 picocuries per gram, and up to hundreds of picocuries per gram in several places, but we don't have anything hotter than that."

The Li Tungsten site also has heavy metal contamination. According to Als, three out of about five dozen soil samples failed the toxicity test for lead.

"That means the area where the material is over the RCRA standard is compromised, so it might have to go to a different facility," Als said.

The remainder of the material, however, is appropriate for any facility authorized to accept 11e(2) material and the EPA's responsibility is in making sure the site is cleaned up on schedule, not which specific waste facility the material goes to.

"We basically tell the PRPs (potentially responsible parties) to get rid of the stuff," he said. "They tell us where they're going to send it and then we check with the agencies there to make sure there are no problems and sign off on the plans to ship it."

Because the Region 8 office of the EPA in Denver has not yet approved Cotter's request, however, receipt of the Li Tungsten waste is on hold.

"We have private parties here that basically want to wait for Cotter to get its approval, but we have a problem with that," said Als. "We're sitting around waiting too long. We want the stuff cleaned up.

"We care where it goes, but we don't like being in limbo."

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