

## **ADMRegs-Holtec-CISFEISCEm Resource**

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# PUBLIC SUBMISSION

**Docket:** NRC-2018-0052  
Holtec International HI-STORE Consolidated Interim Storage Facility Project

**Comment On:** NRC-2018-0052-0001  
Holtec International HI-STORE Consolidated Interim Storage Facility Project

**Document:** NRC-2018-0052-DRAFT-0076  
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## General Comment

See attached file, Re: Docket ID NRC20180052, Submitted by Kevin Kamps, Radioactive Waste Specialist, Beyond Nuclear, May 18, 2018:

Public Comments re: Risks of Routine or Incident-Free Shipments Nonetheless Being Like Mobile X-ray Machines That Cant Be Turned Off, and Even Worse Risks of Externally Contaminated Shipments

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## Attachments

5 18 18 Risks of Mobile X-ray Machines That Cant Be Turned Off and Externally Contaminated Shipments

Re: "Docket ID NRC-2018-0052"

Submitted by Kevin Kamps, Radioactive Waste Specialist, Beyond Nuclear, May 18, 2018

**Public Comments re: Risks of "Routine" or "Incident-Free" Shipments Nonetheless Being Like "Mobile X-ray Machines That Can't Be Turned Off," and Even Worse Risks of Externally Contaminated Shipments**

Even "routine" or "incident-free" shipments of highly radioactive irradiated nuclear fuel – such as those bound for so-called "centralized" or "consolidated interim storage facilities" (CISFs) like Holtec/ELEA, NM or WCS, TX – carry health risks to workers and innocent passers by, and residents along the shipping routes nationwide. This is because it would take so much radiation shielding to completely hold in the gamma- and neutron-radiation, being emitted by the highly radioactive waste, that the shipments would be too heavy to move economically. The shipping containers would also be too expensive to manufacture in the first place, from the perspective of the nuclear power industry, which cuts costs (in other words boosts profits) at the expense of human health, safety, and the environment. So NRC has compromised, and "allows" for or "permits," a certain amount of hazardous gamma- and neutron-radiation to stream out of (be emitted by) the shipping container, exposing people who are unfortunate enough to be close enough by, to the hazardous ionizing radioactivity.

NRC's regulations allow for up to 10 milli-rem per hour (mR/hr) of gamma radiation to be emitted, about six feet (two meters) away from a shipping cask's exterior surface. That's about one to two chest X-rays worth of gamma radiation, per hour of exposure.

Since the radiation dissipates with the square root of the distance, this means that NRC's regulations "allow" for up to 200 mR/hr, at the surface of the cask's exterior. That's 20 to 40 chest X-rays worth of gamma radiation, per hour, which NRC "allows" to stream out, right at the cask's surface.

NRC has done a cost-benefit analysis – the cost, to human health; the benefit, to the nuclear power industry's bottom line – and deemed these exposure levels "acceptable" or "permissible." ("Permissible" or "acceptable" should never be confused with "safe" or "harmless" – exposures limited to 200 mR/hr, or even 10 mR/hr, still do carry health risks. After all, any level of radiation, no matter how small, has long been confirmed to cause cancer. For more information, see: <https://web.archive.org/web/20160325141005/http://www.nirs.org/press/06-30-2005/1>)

The humans actually harmed by these exposures to hazardous radioactivity – related to the industry's NRC-approved, ***unnecessary*** shipments bound for CISFs, for example – might beg to differ! But of course, any negative health impacts

associated with irradiated nuclear fuel shipments will not be closely tracked (or tracked at all) by NRC -- or any other federal, state, or local government agency for that matter. NRC and industry almost always downplay the health risks, and would almost certainly deny any connection between such exposures and negative health outcomes.

“Six feet away” could affect a person standing beside a train track, as the rail shipment goes by. Some real world examples of this situation include the Takoma Metro Station near Takoma Park, Maryland – the Red Line Metro Station platform is right beside the CSX railway, which is targeted for trains to haul irradiated nuclear fuel from nearby nuclear power plants, such as those bound for Holtec/ELEA, NM and/or WCS, TX.

Although further than six feet away, residences located immediately adjacent to these same CSX rail lines in Tacoma, D.C. mean that those living there could well be exposed to gamma radiation, although at a lower dose rate (again, the dose rate decreases inversely with the square root of the distance). However, residents can be expected to be present in their homes a lot more often than commuters standing on a Metro platform – including during sleeping hours, when trains carrying irradiated nuclear fuel could still go by. And of course, residents along these tracks, would also very likely also be commuters standing on the platform, leading to multiple exposures in their daily (and nightly) lives, for years (or decades!) on end during a Holtec/ELEA and/or WCS CISF shipping campaign.

Although dose rates decrease exponentially with distance, an 800 meter (half-mile) “Region of Influence” regarding “incident-free impacts” is nonetheless acknowledged, in terms of hazardous radiation exposures along shipping routes.

Trains pausing next to commuter platforms or residences will prolong these potentially hazardous exposures. Paused trains – even ones carrying hazardous cargos – are commonplace in the U.S. Pauses can sometimes last a long time. Lead automobiles, stuck by and closest to idling trains, at railroad crossings, could mean the occupants of those vehicles are exposed to hazardous gamma- and neutron-radiation at close range, for a prolonged period. Even a rolling train car would emit a certain dose as it passed by, to lead car occupants stopped nearest the tracks.

Similar situations will arise across the U.S. Innocent passers by, whose daily lives bring them in close proximity to railways, or waterways (barges), or heavy haul truck roadway routes that would be used to ship irradiated nuclear fuel, mean that ordinary people would be exposed to hazardous gamma radiation in some amount greater than zero – perhaps repeatedly, over the course of years (or decades!) during a Holtec/ELEA, NM and/or WCS, TX shipping campaign.

Holtec brags in its CISF license application documents that it can accommodate any and all shipping and storage containers certified by NRC. If this is the case, then even Legal Weight Truck (LWT) shipments by roadway must be considered in terms of

these Mobile X-ray Machines That Can't Be Turned Off risks. LWT shipments could travel smaller roadways en route from atomic reactors to interstate highways, then cross the entire continent. Truck drivers pass through toll booths, stop at gas stations to refuel, pause at rest areas, and in some cases even park for extended periods. Innocent bystanders at any of these facilities, drivers and passengers of other vehicles on the roads, and especially workers (toll booth workers, rest area and gas station workers, law enforcement officers, inspectors, and the LWT shipments drivers themselves), coming into the most intimate and repeated close contact with these LWT shipments, would receive the worst, accumulating doses. Then the LWT shipments would finally exit the interstate highway system, and take smaller roadways to the final targeted destination, such as the Holtec/ELEA CISF, again putting at repeated risk the local populations there, for years, even decades, on end.

As mentioned just above, the 200 mR/hr "acceptable" dose rate at the surface of shipping casks would most likely impact workers – locomotive engineers, railway workers, inspectors, and security guards on the railways, as well as those others listed above re: LWT shipments on roads. Barge and/or heavy haul truck shipments would similarly expose those workforces as well.

However, when, in 2003, the Big Rock Point reactor pressure vessel (albeit so-called "low" level radioactive waste, it still serves as a cautionary tale) was shipped by heavy haul truck into Gaylord, Michigan to be loaded onto a train, for its shipment by rail to Barnwell, South Carolina, to be buried in an unlined, leaking ditch, neither the nuclear utility, Consumers Power, nor the NRC (nor any other federal, state, or local government agency), nor local law enforcement, enforced a security or safety or health-protection perimeter around the shipping container. As if it were a parade float, onlookers were allowed to simply approach the shipping container, walk right up to it, and even touch it. In fact, a parade would probably have had better health, safety, and security precautions in place! (See 2003 written entries, as well as a photo, about this and other incidents that occurred during this single shipment, posted online at:

<https://web.archive.org/web/20151211005008/http://www.nirs.org/radwaste/hltransport/mobilechernobyl.htm>). WCS would involve some 4,000 irradiated nuclear fuel shipments into the Andrews County, TX de facto permanent, surface storage, parking lot dump, located on the NM state line at Eunice. The Holtec/ELEA, NM CISF would involve 10,000+ such shipments (perhaps as many as 17,600)!

These risks would be doubled by an equal number of shipments out from these CISFs, *if* the waste ever were to leave. (A big if!)

Likewise, Bob Halstead, several years ago, was able to guide a camera crew deep into the heart of a rail yard, just off downtown Chicago, that would be used to temporarily store (albeit, "temporarily" could last for days) train cars holding irradiated nuclear fuel. Security was nowhere to be seen. (Halstead, then serving as transport consultant to the State of Nevada Agency for Nuclear Projects, now serves

as the agency's director. More recently, in a documentary film about the Yucca Mountain, Nevada dump-site proposal, Halstead reported that around 40% of all shipments bound for Nevada would pass through the Chicago area; a similar percentage is to be expected in the context of NM-bound Holtec/ELEA CISF shipments.)

Similarly, Rick Hind of Greenpeace U.S.A. guided a *Wall Street Journal* reporter deep into the heart of underground (or aboveground but still covered) train tunnels under the surface/street level in Washington, D.C. The graffiti and art on the walls showed clearly that the tunnels are frequented by unauthorized human beings on an ongoing basis. (Hind was showing the reporter how insecure such tunnels, even in the nation's capital, are to potential security risks, even after the 9/11 attacks, as hazardous train cargos – including chlorine shipments – pass by and through, remarkably close to the U.S. Capitol, for example! That very rail route could also be used to haul highly radioactive irradiated nuclear fuel, bound for the Holtec/ELEA CISF targeted at NM.)

In these ways, that 200 mR/hr “permissible” dose rate could impact not only workers, but even members of the public, countless unwitting (and non-consenting!) innocent bystanders.

In this sense, even “routine” or “incident-free” shipments of irradiated nuclear fuel can be considered as similar to ***mobile X-ray machines that can't be turned off***, a phrase describing the concept first expressed by Lauren Olson, a supporter of NIRS (Nuclear Information and Resource Service), and sister of Mary Olson, a long-serving NIRS staffer.

To make matters worse, there have been large numbers of shipments, externally contaminated with radioactivity on their outer surface, making their actual dose rates much higher – and thus more hazardous – in serious violation of the already compromised “permissible” or “acceptable” levels.

Areva (recently renamed Orano, previously named Cogema) – a key partner in the WCS, TX proposal – at its home base in France, experienced just such a plague or epidemic of externally contaminated shipments. A full 25% to 33% of Areva's irradiated nuclear fuel shipments, into its La Hague reprocessing facility, were externally contaminated, for years on end, above “permissible” levels, in the 1990s. This amounted to many hundreds of individual shipments, contaminated above “permissible” levels, over the course of several long years. On average, the shipments were giving off radiation dose rates ***500 times*** the “permissible” level; in one instance, a shipment was emitting radiation ***3,300 times*** the “acceptable” level. In other words, hundreds – or even thousands -- of chest x-rays worth of gamma radiation, were being emitted, per hour, exposing anyone at close enough range to very hazardous ionizing radiation exposure levels. This posed a grave health risk to workers, and innocent bystanders and residents, along the impacted shipping route corridors.

Environmental watchdogs and journalists revealed this contaminated shipment scandal. For more info., see the WISE-Paris write up, Transport Special - Plutonium Investigation n°6/7, posted at <http://www.wise-paris.org/> under Bulletins.

But such externally contaminated shipments have happened in the U.S., as well. Halstead documented this in a report prepared for the Nevada State Agency for Nuclear Projects in 1996. It is entitled “Reported Incidents Involving Spent Nuclear Fuel Shipments, 1949 to Present.” 49 “surface contamination” incidents are documented. This report is posted online at: <http://www.state.nv.us/nucwaste/trans/nucinc01.htm>.

One remarkable incident left water-based paint chips contaminated with hazardous radioactive particles strewn along roadways for countless miles. After detecting external contamination prior to the departure of the outward-bound LWT shipment of irradiated nuclear fuel, from an atomic reactor, workers were instructed to “fix” the contamination and then proceed with the shipment. To “fix” it, or lock it down, the workers turned to the standard industry practice of painting it, with the assumption that the paint would contain the contamination underneath its surface (not that a thin layer of paint would block gamma or neutron emissions, however!). But the workers made the unfortunate mistake of using the wrong kind of paint. They used water-soluble paint, instead of oil-based paint. As the shipment proceeded en route, it encountered rainy weather. Sure enough, the paint “fixing” failed, and radioactively contaminated paint chips began peeling off, to “fallout” on the road and along the roadside, for countless miles along the way. The failure was not discovered until long after it was too late.

Another remarkable incident involved an externally contaminated rail shipment leaving the Dairyland Electric Co-Op/Genoa atomic reactor in LaCrosse, WI. After the contamination was discovered, the decision was made to proceed with the externally contaminated shipments anyway – and simply wrap the shipping container in plastic, again to try to “fix” the contamination, to lock it down. Most kinds of plastic wrap do not block gamma- or neutron-radiation, and are also dubious at best in terms of surviving the force of the wind, and other elements, during rugged rail transport!

Such incidents are documented in Dr. Marvin Resnikoff’s book, *The Next Nuclear Gamble: Transportation and Storage of Nuclear Waste* (Council on Economic Priorities, 1985).

Prepared on May 18, 2018. For more info., please contact Kevin Kamps, Beyond Nuclear’s Radioactive Waste Specialist, at [kevin@beyondnuclear.org](mailto:kevin@beyondnuclear.org). Learn more about radioactive waste transport risks at Beyond Nuclear’s website, at: <http://www.beyondnuclear.org/waste-transportation/>