ADMRegs-Holtec-CISFEISCEm Resource

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Holtec CISF
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Risks of "Routine" or "Incident-Free" Shipments Nonetheless Being Like "Mobile X-ray Machines That Can't Be Turned Off," and 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 nation-wide. 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. So NRC has compromised, and "allows" for or "permits," a certain amount of hazardous gamma- and neutron-radiation to stream out of the shipping container, exposing people close enough by to the hazardous 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 train 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 cars stuck by and closest to paused trains at railroad crossings could mean the occupants of those cars are exposed to hazardous gamma- and neutron-radiation. 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.

The 200 mR/hr "acceptable" dose rate at the surface of shipping casks would most likely impact workers – locomotive engineers, railway workers, inspectors, security guards, etc.

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 ditch, neither the nuclear utility, Consumers Power, nor the NRC (nor any other federal or state

agency), nor local law enforcement, created 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/hlwtransport/mobilechernobyl.htm). WCS would involve 4,000 irradiated nuclear fuel shipments into the Andrews County, TX parking lot dump located on the NM state line at Eunine. The Holtec/ELEA, NM CISF would involve 10,000+ such shipments!

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.)

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 street level in Washington, D.C. The graffiti and art on the walls showed clearly that the tunnels are frequented by 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 as hazardous train cargos – including chlorine shipments – pass by and through, remarkably close to the U.S. Capitol, for example!)

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) – 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. 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.

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General Comment

Regarding Docket ID NRC20180052:

Please see attached file. In addition, please lend due consideration to this remark.

We have been generating nuclear waste for 70 years now. All this time there has been no method of safely storing this incredibly toxic waste. There still isnt. And there probably never will be. The USA now generates 2000 tons (4 million pounds) of toxic nuclear waste every year according to the nuclear power industry. And we have had serious to major accidents at Three Mile Island, Fukushima, and Chernobyl. Chernobyl especially took many lives, will be causing genetic defects to the surrounding population for years and years. The jury is still out on Fukushima.

Here are some of the EPAs statistics on the half-lives of commonly encountered radionuclides generated by nuclear reactors.

The half-life of iodine-131 is 8 days.
The half-life of cobalt-60 is 5.27 years.
The half-life of tritium is 12.3 years
The half-life of strontium-90 is 29.1 years.
The half-life of cesium-137 is 30 years.
The half-life of technetium-99 is 212,000 years.
The half-life of iodine-129 is 15.7 million years.

Generally, artificial isotopes of thorium come from decay of other man-made radionuclides, or absorption in

nuclear reactions.
The half-life of thorium-228 is 1.9 years.
The half-life of thorium-230 is 75,400 years.
Thorium-232 has a half-life of 14 billion years.

Plutonium has at least 15 different isotopes, all of which are radioactive. The most common ones are Plutonium-238, Plutonium-239, and Plutonium-240.

Plutonium-238 has a half-life of 87.7 years.
Plutonium-239 has a half-life of 24,100 years.
Plutonium-240 has a half-life 6,560 years.

The range of these half-lives goes from days, to 10s of years, to thousands of years, to millions of years, to billions of years. The persons promoting the nuclear power industry, then, are saying to our descendants: For the next billion years or so, you take care of the dangerous, very highly toxic, cancer-causing wastes that we have produced in vast quantities. That is our legacy to you. This, simply put, is criminal insanity. And this is what needs to be shouted out every day that a single nuclear power plant is still in operation.

Attachments

4+11+18+Risks+of+Mobile+X-ray+Machines+That+Cant+Be+Turned+Off+and+Externally+Contaminated+Shipments