

Members of the Senate Energy and Public Utilities Committee,

Nuclear energy has been advertised as being a clean, emission and carbon free energy source by its proponents for a very long time and has never been the case. The industry and regulators have allowed from every reactor in the country release normalized discharges of radioactive effluents on a routine basis. Among these emissions are carbon-14 that can bond with oxygen forming $^{14}\text{CO}_2$ radioactive carbon dioxide of which then mean even during normal operations, Nuclear energy is not carbon free or emission free. These effluents come in liquid and gas phases which also include H_3 tritium or $^3\text{H}_2\text{O}$ tritiated water of which when taken up into plantlife either replaces hydrogen in the cell or binds directly to the cell forming

Organically Bound Tritium (OBT). In this form when taken up by people through food, the biological half-life in long term bodily systems is upwards of a year versus 12-30 days with tritium, and thus a higher exposure. Also, Noble gases such as Xenon-133 and Krypton-85 of which can interact with greenhouse gases, Iodine 131, Beryllium-7, cesium 134 & 137 and much more. As we can clearly see the public hasn't been told about these emissions as the vast majority of people believe that nuclear reactors are free of emissions and if they knew of these emissions perhaps the general public would have a different opinion about nuclear energy. The nuclear fuel processing and reprocessing plants that make the fuel for these reactors also release emissions of radioactive effluents that include transurnics such as Plutonium

and Neptunium like in the case of the Portsmouth Gaseous Diffusion Plant that are alpha emitters of high linear energy transfer radiation (LET) and even at low doses have the ability to cause DNA strand breaks, cell necrosis or apoptosis, micronucleus formations, chromosomal aberrations that negatively effect human health.

When it comes to the health and welfare of the workers of the nuclear industry, a good indicator would be to look to how many victims and the amount of monetary reimbursement they have collected over the years. Millions of dollars have been paid to the workers in the uranium mining industry, fuel processing and reprocessing sites and reactor site employees for their exposures they recieved from this process.

The nuclear industry has continued for 70+ years putting the cart in front of the horse by not having any real procedure to mitigate a meltdown promptly like we see with the Fukushima Daiichi triple meltdowns nor a proper plan to safely store nuclear waste that now is stored at every reactor site in the country.

In closing, the nuclear industry has made everyone believe that nuclear reactors are emission free and carbon free, including our Representatives, and it's time this industry told the American people the truth so they can come to their own conclusion if they want more radioactive effluents added to their environment. Thank you

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