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Future generations and Nuclear Waste Management

Every year nuclear reactors produces several thousand tones of nuclear waste, a waste that is extremely hazardous. High level waste, like spent nuclear fuel, cannot be handled as ordinary industrial waste but must be contained and stored in thick steel containers just in order to keep the surrounding safe from nuclear contamination. There are several long-term solutions to this waste problem. Some are quite unrealistic, like sending the waste into space or to bury it under the ocean seabed. But given the strong need to secure the waste more realistic methods for high level waste management have also been proposed. However, no method has so far been implemented and there is a considerable debate about which method that is the safest.

Some suggested methods for management are: *Surface storage*, in which the waste is stored in robust surface or near surface facilities, *Geological disposal*, where the waste gets buried in tunnels at the depth of 400-600 meters or in deep bore holes, and last, *Partitioning and Transmutation*, in which the waste is reprocessed and used in nuclear facilities which can change the material makeup of the waste and reduce its long-term radiation. This last feature is important due to fact that high level waste will be hazardous for at least 100 000 years.

Given the danger of the waste and the fact that it must somehow be removed as a possible contamination source it is appropriate to make a ethical evaluation of the different waste management methods. This becomes even more relevant given the fact that ethical principles or goals have been suggested by the IAEA as guidelines for waste management. Similar goal have also been suggested by the Swedish National Council for Nuclear Waste. At least four moral goals have been proposed. 1) *Reduce the risks of accidental direct or indirect exposure to radiation.* 2) *Prevent the spreading of nuclear weapons.* 3) *Contemporaries should finance, develop and implement the waste management method.* 4) *Future generations should be able to retrieve the waste.*

An obvious problem with these four principles is that they could conflict. In such cases there must be a way of prioritizing them in order to get a definitive answer about what to do. One way of dealing with this is to accept a deeper ethical norm or value that could give us some insight in how to rank the objectives. The author suggest that an egalitarian principle, based on idea that both contemporaries and future generations should have an equal opportunity for resources and to avoid risks. Such kind of principle have been suggested by the political philosopher Brian Barry. The author of the paper claim that this principle should be interpreted as that some resources are always important for living a good life quite independent of our specific idea of the good life.

This paper suggests that the different methods for nuclear waste management can be evaluated from an ethical perspective by first ranking the four objectives and then apply these on each management method. It could then be possible to identify the morally relevant characteristics of each method and compare then with each other. The conclusion is that future generations will not gain any benefits of the waste and have no way of consenting to any risks that they might face from the waste. It is therefore morally justified to claim that best method should include the reduction of risks that future generations might face. Accordingly, the author claims that Partitioning and Transmutation is well justified as the best method of nuclear waste management, at least from the perspective of our responsibility towards future generations.