

FACT SHEET

Generation IV Plus Grid sized SMR waste levels

Low and Intermediate Level Waste

With respect to low and intermediate level waste, both the ARC-100 and Moltex SSR-W reactors will produce less waste than the current generation of nuclear reactors.

Both reactors have inherently safe characteristics (for example, they shut themselves down if they get too hot). As a result, less equipment is required, and they will not need to be serviced or maintained as frequently as a CANDU reactor. This leads to ***less low and intermediate level waste being produced***. The operation of the fuel conversion facility needed to convert used CANDU fuel for the fuel for the Moltex SSR-W reactor will however generate some low and intermediate level waste.

High Level Waste

The ARC-100 reactor will require less fuel to produce a given MW of electricity relative to a CANDU reactor. The ARC-100 is a fast breeder reactor, meaning it produces more fissionable fuel than it starts with. Compared to a CANDU reactor, it will have a higher burnup of fuel and a higher efficiency in steam to electrical output.

There is also the potential in the future for the ARC-100 to recycle its used fuel. If this were to happen, even more power is produced from a given amount of new fuel and a significant portion of the long lived more radiotoxic transuranics (also referred to as actinides) would be consumed.

For the Moltex SSR-W reactor, we expect it to generate 300 MW(e) of electrical power for 60 years without using any new uranium but instead using the used fuel from the Point Lepreau Nuclear Generating Station. Essentially, the used fuel from the Point Lepreau Nuclear Generating Station will be converted into a different form.

The principle behind fuel reprocessing and recycling is to consume much of the radionuclides with the highest levels of radiotoxicity and longest half-lives (the transuranics / actinides), significantly reducing their amount. It should be noted that in the case of Moltex, the amount of fission products that have a lower level of radiotoxicity and generally much shorter half-lives would increase over the amount originally in the used Candu fuel, however again these are generally much shorter lived, the order of several hundred years and less radiotoxic, although there are a few exceptions. Work is on-going to fully understand how much of the transuranics / actinides are consumed, the exact details of the waste, and how it will be best stored.