Release Through a Monitored Pathway

Part of the RASCAL Instructor-led Training

Monitored Mix - Background

- When a nuclear power plant effluent monitor detects a release, the release is likely to be a mixture of many radionuclides. However, the effluent monitor cannot identity the specific radionuclides present. The effluent monitor provides detector count rates and a plant computer will be used to calculate/convert activity release rates for noble gases, radioiodines, and sometimes particulates.
- Monitored releases will be filtered so they should be mostly noble gases but with a small proportion of iodines and particulates.

MONITORED MIX - SCENARIO

Koeberg Unit 2 had been operating at 100% percent power when a malfunction occurred causing the plant to shutdown at 15:50.

Approximately 10 minutes later (16:00), an effluent release through a monitored pathway (stack height 100 ft) was detected by plant operators.

Monitored Mix - Scenario

The effluent release rate was reported to be 30,000 GBq/s for noble gases, 400 GBq/s for iodine radioisotopes, and 10 GBq/s for particulates.

The plant's Technical Specification (TS) requires that the release duration must be limited to no more than 30 minutes.

Use predefined Standard Meteorology.

Monitored Mix - Task

Determine the projected TED and Child Thyroid CED at 0.8 and 8 kilometers and record the answers in the below provided spaces.

	Dose at 0.8 km	Dose at 8 km
TED (Sv)		
Child Thyroid CED (Sv)		

Monitored Mix - Results

	Dose at 0.8 km	Dose at 8 km
TED (Sv)	1.3E-02	1.2E-03
Child Thyroid CED (Sv)	2.8E-01	1.9E-02

Conclusions?

- Will this method work for multiple release paths?
- Likelihood
- Uncertainty