

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 identify 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

Wolf Creek Generating Station 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 211 ft) was detected by plant operators.



MONITORED MIX - SCENARIO

The effluent release rate was reported to be 950 Ci/s for noble gases, 12 Ci/s for iodine radioisotopes, and 0.3 Ci/s for particulates.

.



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

YOUR TURN TO USE RASCAL



Given the scenario excerpt below, run the entire case in RASCAL.

Wolf Creek Generating Station had been operating normally 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 211 ft) was detected by plant operators. The effluent release rate was reported to be 950 Ci/s for noble gases, 12 Ci/s for iodine radioisotopes, and 0.3 Ci/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 and ICRP 60/72.

	Dose at 1.0 mi	Dose at 5.0 mi
TED (rem)		
Child Thyroid CED (Sv)		

LET'S WALK THROUGH THE PROBLEM TOGETHER



MONITORED MIXTURES - RESULTS

	Dose at 1 mile	Dose at 5 miles
TED (rem)	0.63	0.14
Child Thyroid CED (rem)	11.0	2.00

Conclusions?

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