

RECORD #99

TITLE: Attention to Liquid Dilution Volumes in Semiannual
Radioactive Effluent Release Reports

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SUBJECT: ATTENTION TO LIQUID DILUTION VOLUMES IN SEMIANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORTS

Recently, questions have arisen about the accuracy of release report information for Rancho Seco and for Nine Mile Point, Unit No. 1. One part of the problem is the incorrect reporting of dilution volumes. Regulatory Guide 1.21 is explicit; it calls for reporting "...dilution volume used during the period of the report." Nevertheless, some licensees report only the dilution water flow during batch releases. This leads to gross overestimates of population doses and of doses to maximally exposed individuals. Consequently, in reviewing reports associated with RETS, care should be taken to assess the reasonableness of reported dilution volumes.

As a "rule of thumb," there will be on the order of 1 cfs/MWe for once-through cooling. Cooling towers may reduce actual dilution flows by factors of 10 or more. In many instances, we have allowed credit for additional dilution by the water receiving the waste. Normally, this additional dilution factor is one for plants with once-through cooling. Thus, the dilution volume (or flow) must be determined specifically for each plant. I believe a table of expected dilution volumes should be prepared by the contractor using data from the various environmental statements, ODCMs, etc.

The Nine Mile Point case is an interesting example. For 1981, they reported a release of 3.53 Ci Cs-137 and a dilution volume of 781 million liters (0.875 cfs). By our standard calculations, this results in a maximum individual dose of 13 rems and a population dose of 2,600 person-rems. Actually, the dilution volume was 414 billion liters (460 cfs). This reduced the calculated population dose to 4.9 person-rems. It also reduced the calculated maximum individual dose to 25 mrem to an adult total body and 49 mrem to a teen liver. Nine Mile Point was not required to meet the Appendix I guidelines in 1981, but they were

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they were constrained by 40 CFR 190, so the maximum individual dose values required further investigation. In this instance, the staff concluded that an additional dilution factor was justified and that 40 CFR 190 had not been violated. In the future, the contractors should call such a situation to the staff's attention.

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