

United States Nuclear Regulatory Commission
Office of Public Affairs
Washington, DC 20555
Phone 301-415-8200 Fax 301-415-2234
Internet:opa@nrc.gov

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NEW NRC REGULATION TO PERMIT NUCLEAR POWER PLANTS TO CHANGE ACCIDENT ANALYSES OF PUBLIC RADIATION DOSE

The Nuclear Regulatory Commission has amended its regulations to permit nuclear power plant licensees to take advantage of updated research findings on estimated public radiation doses from reactor accidents.

The new rule will permit these licensees to use what is known as an alternative "source term" for the accident analysis on which plant design and operations are based, replacing a source term that has been in effect for the past 37 years. Experience from the 1979 Three Mile Island accident and research that followed it have made this change possible.

"Source term" is the technical name for the calculation of the rate, magnitude and chemical form in which the radioactive material produced by the atom-splitting process in a nuclear reactor would be released from the reactor to the containment if an accident occurred.

Nuclear power plants use the source term for analyzing possible accident consequences -- including potential radiation dose to the public from leakage out of the containment into the environment -- and factor that analysis into plant design and operation.

All currently operating nuclear power plants were licensed on the basis of a source term published in 1962 by the Atomic Energy Commission, NRC's predecessor agency. That procedure assumed an immediate release of radioactive materials to the containment during a severe accident, including a substantial amount of radioactive iodine.

But what occurred in the Three Mile Island accident, in addition to extensive research which followed it, suggests that a release into the containment would be phased, rather than immediate, and that radioactive iodine would be predominantly in the form of cesium iodide, an aerosol that is more amenable to mitigation mechanisms. Revised source terms published by NRC in 1995 reflected those findings.

The rule now being adopted will permit utilities with nuclear power plant operating licenses to replace the 1962-era source term in their licenses with a revised one. NRC believes this change can reduce an unnecessary burden on many licensees without compromising public

health and safety, reduce worker radiation exposure, and improve overall safety. This regulation, however, is not intended to provide licensees with relief from NRC's emergency planning requirements.

Specifically, it is expected that such a change could cut down on occupational radiation exposures in activities such as the frequency of installation of charcoal filters, maintenance of certain containment isolation valves, and repairs to systems to maintain leak-rate limits that are overly restrictive in the light of the recent research. Cutting back on this unnecessary work also could lead to cost savings. Improvements in overall safety are also likely due to, for example, reduction in the loading of emergency diesel generators.

Licensees who wish to continue with their present source term can do so.

Along with the adoption of the new rule, NRC also has published for public comment a draft regulatory guide and a new section of the NRC Standard Review Plan, both of which are intended to give licensees guidance as to acceptable methods of complying with the new rule. The new regulation will take effect 30 days after its publication in a forthcoming edition of the Federal Register.

That Federal Register notice also will have more information about the new draft regulatory guide and Standard Review Plan section. Comments on the latter two documents should be submitted 75 days after the Federal Register notice's publication.

After this rule was published in draft form in March, NRC received seven comment letters, all of which were supportive. The NRC staff also conducted two workshops, in April and in June, with interested stakeholders to discuss this rulemaking.

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