

should not be adopted as a mandatory requirement in the HMR. RSPA acknowledges the difficulties of enforcing a radiation protection program that is based on the principles of ALARA. However, the EPA guidance, and the radiation programs requirements of the NRC and the Occupational Safety and Health Administration are based on ALARA principles. The principle of reduction of exposure to levels that are ALARA is typically implemented in two different ways. First, it is applied to the design of the facility so as to reduce, prospectively, the anticipated exposure of workers. Second, it is applied to actual operations; that is work practices are designed and carried out to reduce the exposure of workers. Effective implementation of the ALARA principles involves: education of workers concerning the health risks of exposure to radiation; training in regulatory requirements and procedures to control exposure levels and doses; and management and supervision of radiation protection activities, including the choice and implementation of radiation control measures. RSPA believes that adoption of the ALARA principles as a requirement in the HMR is an important facet of a radiation protection program, and, therefore, is not adopting these commenters request to adopt the ALARA principles as a non-mandatory requirement.

As noted above, radiation protection programs must be developed and implemented in accordance with the EPA guidance. In order to make it easier for the regulated community to comply with the radiation protection program requirements, RSPA has extracted from the EPA guidance and placed in the HMR some of the more important aspects of the EPA guidance. These include the limits on exposure to pregnant females and persons under the age of 18, and recordkeeping requirements.

Though RSPA is not imposing a specific set of guidelines to be followed in developing a radiation protection program, RSPA is referencing two reports from the National Council on Radiation Protection and Measurements (NCRP) which provide useful information in developing and implementing a radiation protection program. NCRP Report No. 116, titled "Limitation of Exposure to Ionizing Radiation", addresses limits for workers as well as for members of the general public. That report is essentially consistent with the most recent guidance from the International Commission on Radiological Protection (ICRP) which is also being incorporated

into the basic radiation protection standards of the IAEA. In NCRP Report No. 116 the annual radiation dose limit for workers is essentially 20 mSv (2 rem) and the limit for members of the general public is 1 mSv (100 mrem) per year. The report contains many of the requirements in the 1987 EPA Guidance, and 10 CFR Part 20. The recommendations in NCRP Report No. 116 cover existing and probable future radiation dose limits and practices for regulating the radiation doses.

The other NCRP Report, No. 59 "Operational Radiation Safety Program" (1978) is recommended as guidance to be tailored to the needs of a hazmat employer when a radiation protection program needs to be established. The report contains information about organization, activities, emergency planning, equipment, reporting and documentation, facilities, training, personnel qualifications, etc. The information is useful for developing radiation protection programs for small and large corporations.

In this final rule, the radiation dose limit for members of the general public is the same as those proposed in the NPRM, (i.e., 5 mSv (500 mrem)) per year. This value is consistent with the Federal Radiation Council (FRC) guidance of 1960 and was consistent with the NRC's 10 CFR Part 20 in 1989. Subsequently, NRC revised 10 CFR Part 20 and their annual limit for exposures to members of the general public is now 1 mSv (100 mrem) per year. EPA is currently developing guidance for regulatory agencies for limiting radiation exposures for members of the general public, and the anticipated annual limit is expected to be 1 mSv (100 mrem) with no single practice or activity causing a person to receive more than a minor fraction of that limit. In a future rulemaking, RSPA will address the new guidance from EPA concerning exposures of the general public.

A number of commenters questioned the relationship between radiation exposure limits proposed in the NPRM and the minimum separation distances required in the HMR. The DOE noted that, if changes are not made, the occupational dose limits proposed in § 173.405 would be quickly exceeded as a result of the modal requirements in Parts 174-177. RSPA acknowledges the differences between the dose limits established in the radiation protection programs and the dose rate limits related to TI separation distances set forth in Parts 174, 175, 176, and 177. However, RSPA believes that requirements addressing both annual dose limits and TI/separation distances

are essential in establishing effective radiation protection standards. Minimization of annual doses received by occupationally exposed workers and members of the general public is the primary objective in any adequate radiation protection program. Although TI/separation distance requirements do not, in themselves, assure that annual dose requirements will be met, they comprise minimal operational requirements that must also be satisfied. A carrier may have to impose more restrictive limits in its radiation protection program.

A number of commenters asked if radiation protection requirements apply only to workers preparing the material for shipment, to workers receiving packages, or to carriers during transport. This confusion arose because the radiation protection program requirements were proposed to be adopted in Part 173. Accordingly, RSPA is clarifying the applicability of the requirements for the radiation protection program by moving the requirements to subpart I in Part 172 in order to clarify that the requirements apply to both offerors and carriers of radioactive materials. In addition, applicable sections have been added to the modal parts in Parts 174, 175, 176 and 177, in order to ensure that carriers are aware of the radiation protection requirements in subpart I of part 172. RSPA agrees with a number of commenters that provisions established in this final rule should not replace or duplicate existing approved radiation protection program requirements. Accordingly, RSPA is adding an exception which states that any radiation protection program already in place and approved by an appropriate federal or state agency is deemed adequate to meet the radiation protection requirements of the HMR.

Many commenters were concerned about the definitions of several terms, particularly "transport worker" and "general public". The phrase "transport worker" is being replaced by the phrase "hazmat employee", which was defined in § 171.8 as a result of Docket HM-126F. In the context of radiation protection programs, this term is further refined to include only "occupationally exposed hazmat employees." In this final rule, the term "general public" is defined in § 171.8 to include persons other than occupationally exposed hazmat employees.

Several comments compared the requirement to provide training as to the hazards of radioactive materials and the provisions in Part 172, Subpart H to provide safety training to all hazmat employees. As specified in Part 172,