

State of Colorado

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Colorado Department  
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May 10, 1999

The Secretary  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Attention: Rulemakings and Adjudications Staff

RE: Petition for Rulemaking

The Officers of the Organization of Agreement States and the State of Colorado petition the U.S. Nuclear Regulatory Commission to eliminate the blanket exemption for source material general licensees from the requirements of 10 CFR Parts 19 and 20. This petition requests that the exemption in 10 CFR 40.22(b) be revoked for any source material general licensee that: 1) could exceed public dose limits; 2) could exceed the dose equivalent limits for an embryo/fetus; 3) would require personnel monitoring; or 4) would require posting of a radiation area.

This petition addresses significant safety issues that impact protection of public health and safety, and the environment.

Enclosed is the petition that sets forth the proposed regulation that is to be modified; the petitioner's grounds for and interest in the action requested; and the specific issues and facts that support the petition.

Stanley R. Marshall, Chairman  
Organization of Agreement States

Robert Quillin, Director  
Laboratory and Radiation Services Division,  
Colorado Department of Public Health  
And Environment

Enclosure: as stated

PETITION FOR RULE MAKING  
Modification of Exemptions to Parts 19 and 20 in 10 CFR 40.22(b)  
by the  
Officers of the Organization of Agreement States and  
the State of Colorado

Proposed Regulatory Text

NRC should restrict the exemption from 10 CFR 19 and 20 for general licensees. Any licensee that has the potential to exceed any dose limits or release limits, or which generates a radiation area as defined in Part 20 should be required to meet requirements in both Parts 19 and 20.

10 CFR 40.22 states:

(b) Persons who receive, possess, use, or transfer source material pursuant to the general license issued in paragraph (a) of this section are exempt from the provisions of parts 19, 20, and 21, of this chapter to the extent that such receipt, possession, use or transfer are within the terms of such general license: Provided, however, that this exemption shall not be deemed to apply to any such person who is also in possession of source material under a specific license issued pursuant to this part.

As proposed, this section would read:

(b) Persons who receive, possess, use, or transfer source material pursuant to the general license issued in paragraph (a) of this section are exempt from the provisions of part 19, 20, and 21, of this chapter to the extent that such receipt, possession, use or transfer are within the terms of such general license: Provided, however, that this exemption shall not be deemed to apply to any such person:

(1) who is also in possession of source material under a specific license issued pursuant to this part;

(2) whose use of source material could exceed the occupational dose limits in §20.1201 through §20.1208;

(3) whose use of source material could require tile use of personnel monitoring under §20.1502(a), (b) or (c): or

(4) whose operation requires posting under §20.1902

Statement of Considerations

Background

In 10 CFR Part 20, the NRC established basic radiation standards that apply to specific and most general licensees. These standards are consistent with national and international guidance. They are necessary to provide a frame work in which a licensee can conduct safe operations, prevent radiation workers and the public from exceeding dose limits, and to maintain all radiation exposures As Low As Reasonably Achievable (ALARA).

The NRC has also promulgated provisions in 10 CFR 19 to protect and inform individuals participating in licensed activities. The requirements in Part 19 are not restricted to certain licensees. §19.2 states:

“The regulations in this part apply to *all persons* who receive, possess, use, or transfer material licensed by the Nuclear Regulatory Commission pursuant to the regulations in parts 30 through 36, 39, 40, 60, 61, 70, or part 72 of this chapter...” [emphasis added]

While the NRC has established these basic standards and protections, it has exempted one class of licensee from meeting the requirements of both Parts 19<sup>1</sup> and 20.

Perhaps when this exemption was granted, generally licensed quantities of source material were not thought to be a health and safety hazard. Since this exemption was promulgated, that idea has been shown to be false, and the basic radiation standards have changed. These licensees can:

- expose workers to levels of radiation that require monitoring,
- dispose of radioactive materials in a manner that would not be acceptable for other licensees,
- produce contamination that exceeds release limits, and
- potentially exceed public dose limits to individuals other than those working at their facilities<sup>2</sup>.

It is the petitioners' contention that there is no basis for exempting licensees from complying with basic health and safety standards if the licensee can exceed any of Part 20 dose limits, or can produce “radiation areas”<sup>3</sup> as defined in Part 20.

If a radiation hazard exists that would require most licensees to implement corrective procedures, all licensees who create similar hazards should be required to eliminate the hazard. All individuals using radioactive materials, as well as the general public, should be protected from unsafe and unnecessary exposures to radiation resulting from a licensed operation. The petitioners further contend that individuals participating in licensed activities, and who may receive exposures in excess of the public dose limits in Part 20, should be instructed in both their rights as radiation workers and the procedures necessary to use radioactive materials safely.

The Officers of the Organization of Agreement States and the State of Colorado are impacted by the NRC exemption in two ways. First, because of the exemption, radioactive materials that are potentially hazardous can be transported into our states without the knowledge or control of the Radiation Control Programs. Secondly, experience has already shown that in at least two

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<sup>1</sup> It is noted that the exemption in §40.22(b) is inconsistent with §19.2.

<sup>2</sup> Because Part 20 defines “Radiation Worker”, and source material general licensees are exempt from part 20, these licensees technically do not have “Radiation Workers.”

<sup>3</sup> Because “Radiation area” is defined in Part 20, and these licensees are exempt from Part 20, a source material general licensee could technically have a “radiation area”, regardless of the exposure rate.

cases, state and/or local health departments have had to become involved in remediation efforts.

#### Discussion of problem

On January 28, 1999, Colorado Radiation Control Program received notice that a roll-off Dumpster had set off a radiation alarm at a landfill. The Dumpster had been used for construction debris resulting from a remodeling project after a source material general licensee vacated the structure. Exposure levels exterior to the Dumpster were 4.9 mR/hr. An investigation determined that the generator of the radioactive material was indeed a source material general licensee, who ensured his procurement did not exceed the 150 pounds per year limit in §40.22(a). Further investigation revealed that this licensee vacated the building with levels of contamination that exceeded limits for release for uncontrolled use, and that the licensee had significant levels of exposure at its new facility. Under the exemption in §40.22(b) (and equivalent requirements in Colorado's Regulations), this licensee, and others who use similar quantities of source material, is exempt from the basic health and safety criteria of Part 20.

To demonstrate the significance of this problem, the following is a summary of the measurements, analyses, and calculations of exposure that are associated with the Colorado incident. All exposures resulted from Thorium and its daughters.

- Effective dose equivalent to workers estimated to be up to 1 rem per year based on measurements made at the current facility's workstations.
- Residual contamination at the vacated facility in excess of current standards. Using NRC's computer code DandD version 1, the Maximum Annual Total Effective Dose Equivalent was calculated at 734 mrem, and compared to NRC's standard for unrestricted release - 25 mrem.

The Colorado incident is not the first one involving a source material general licensee. An Internet search identified a 1994 EPA enforcement against Broomer Research, Inc. of Islip, Long Island, New York. The plant manufactured optical lenses and used Thorium Fluoride. EPA identified "appreciable levels of radionuclides, assumed to be thorium, in the sludge discharged"<sup>4</sup> It is unlikely that these facilities are unique. A brief search on the Internet identified multiple suppliers of Thorium Fluoride, and at least one other optical coating company in California. Colorado has contacted manufacturers of Thorium Fluoride and attempted to obtain a list of their Colorado customers. However, to date, only one has supplied the requested information.

The exemption in §40.22(b) permits licensees to exceed the dose limits and ignore the safety issues in Part 20. It has been demonstrated that source material general licensees use materials in quantities that cause hazards and would require a specific licensee to adhere to the following requirements:

- Develop radiation and ALARA programs

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<sup>4</sup> EPA FY 1994 Enforcement and Compliance Assurance Accomplishments Report - Section 3: Regional and State Enforcement and Compliance Assurance Activities.  
<http://es.epa.gov/comply/oeca/section3.html>

- Limit occupational exposures - adults, embryo/fetus and minors
- Limit public dose
- Release limits
- Survey and monitoring requirements
- Storage and control of radioactive materials
- Posting storage areas, containers and radiation areas
- Procedures for receiving and opening packages
- Waste disposal requirements - this may also impact waste brokers and permitted sanitary landfills (see issues below)
- Waste manifests
- Worker training
- Posting of the "Notice to Workers"

There is no logical basis for exempting these licensees from general safety provisions, and allowing them to expose radiation workers and the public at levels greater than is allowed for specific licensees. The exemption should be modified so that it applies to any licensee that might exceed dose limits, release limits or whose operations involve working in a radiation area as defined in 10 CFR Part 20.

In addition to the exposure problems identified above, the "radiation workers" training, protections and rights that apply to all other licensees are exempted by §40.22(b) - even though they work in "a radiation area".

Waste disposal is another item that slips through file cracks because of the exemption. The requirements for the disposal of radioactive waste are also included in 10 CFR Part 20. Disposal is controlled for specific licensees. Unless specifically authorized by regulation or license condition, they must properly dispose of radioactive waste. They are not allowed to dispose of it as common trash. They are not allowed to dilute the waste so it can pass through gate monitors at landfills. If the radioactive waste from source material general licensees is transferred to a broker, that broker may be unaware of the hazard and potentially exposed, and may transfer the hazard to another waste handler for processing, who is likewise unaware of the problem. General licensees who possess source material believe that waste disposal is not an issue because it is only "Generally Licensed"<sup>5</sup>

How the regulatory revisions will solve the problem.

Restricting the exemption in §40.22(b) will ensure that there is a uniform standard of radiation safety for all that need it. All radiation workers will be protected. All licensees will limit public exposures to safe levels. All radioactive waste will be disposed of in accordance with Part 20 requirements.

#### Proposed Regulatory Action & Alternative Approaches

In addition to modifying the exemptions in §40.22(b) as requested, three other regulatory approaches were considered - no action, issuing a license to each general licensee who uses source material and could exceed any of the limits in Part 20, and removing the exemption for all source material general licensees.

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<sup>5</sup> The disposal of Low Level Radioactive Waste (LLRW) is also an issue for LLRW compacts, but this issue is not part of the petition.

The no action alternative is not acceptable because it permits licensees to exceed basic radiation standards and does not provide rights and protections to radiation workers.

Issuing a licensing document to each source material general licensee would be more expensive than changing the regulations, inappropriate, and unworkable. It is less expensive to modify the regulations once, than to issue licensing documents to each source material licensee; especially when companies come into and go out of business. Secondly, it is inappropriate to apply conditions to every such licensee rather than to go through a rule making process. Further, the NRC would not be able to easily determine the scope activity for each source material general licensee.

The third alternative, removing the exemption for all source material general licenses, is not appropriate in relation to the potential risks. There are many licensees that use only small amounts of source material and pose only minimal risks to workers and the public. For example, a laboratory that uses only gram amounts of uranyl nitrates poses little risk, and trace amounts are permitted to be disposed as other than radioactive waste.