



23 Aug 96

U. S. Nuclear Regulatory Commission, Region I  
475 Allendale Road  
King of Prussia, PA 19408-1415

Attn: John Kinneman

Dear Mr. Kinneman:

I was unable to attend the meeting on security issues for University licensees on 21 Aug 96 at King of Prussia. However, I would like to submit some comments on this subject, as listed below, for your consideration. My comments are directed to the use of unsealed radioactive isotopes in university research laboratories. The security requirements for special nuclear material, research reactors, and large sealed sources, such as irradiators, gauges and radiography sources are not intended to be covered by the comments.

1. There does not seem to be a problem with security of radioactive material that warrants keeping research laboratories and/or radioisotope containers locked any time the lab is unattended. The NRC report on the NIH and MIT incidents (NUREG-1535), covering a period of 18 years, found only about 10 incidents involving the deliberate misuse of radioactive material. In most of these cases, it appears that the perpetrators were familiar with the use and storage of the material and would have had access to it even with additional security measures. In my 36 years of experience at this university I am not aware of the intentional misuse or theft of radioactive material from research labs. This is not meant to imply that there have been no unauthorized entries into laboratories, because there have been thefts of equipment and personal items. There have also been unauthorized transfers of small amounts of radioactive material, but these were not related to lack of security and did not pose any hazard. Radioactive material seems to be even less subject to theft or misuse than other hazardous and toxic materials that are present in research labs. Considering the large number of persons using radioactive material in research labs on a daily basis throughout the country, the small number of incidents that have been reported is very surprising. Therefore, I do not think the security requirements for radioactive material should be any more restrictive than for other hazardous material.

2. Security requirements should be commensurate with the hazard of the radioactive material. As an absolute minimum, rooms and containers that do not require labeling under 20.1902 or 20.1905 should not require any security measures. However, these exceptions are based on 10CFR20 Appendix C values, which seem to be unrelated to the actual hazard in many instances. For example, the container labeling requirement for  $^{232}\text{Th}$  is 100  $\mu\text{Ci}$ , 143 times the oral ALI,

while the labeling requirement for  $^{125}\text{I}$  is  $1\ \mu\text{Ci}$ , 0.025 times the oral ALI. The requirements for security should be related to the potential for serious injury or death. An ALI is not supposed to have a significant risk associated with it, which would imply that security measures, such as keeping material under lock and key or constant surveillance, should be for some multiple of the ALI, i.e. 10-100 ALI. This might have to be reduced for some isotopes because of the associated external radiation levels, but a multiple of the ALI does seem to be a logical basis for security measures.

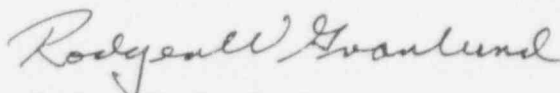
3. The regulations are unrealistic. The security requirement in 10CFR20.1802 for "...constant surveillance of licensed material..." is unrealistic, without some exception for at least activity. A scintillation vial with  $0.001\ \mu\text{Ci}$  of  $^{14}\text{C}$  or a paper smear with a few dpm of licensed material removed from a lab surface would seem to meet the requirements for "continuous surveillance". It is unrealistic to expect licensees to follow such a regulation or regulators to make consistent and fair inspection decisions based on it. If there is an actual potential for serious injury of damage from misuse of material, the expected level of security should be specified in the regulations or in the license. If the potential for serious injury or damage from radioactive material is not present, the normal laboratory security precautions for other hazardous materials should be sufficient. There should be no additional requirements because of the presence of radioactive material.

4. The regulations are inconsistent. There are no exceptions on the amount of material that requires security in 20.1801 or 20.1802. However, 20.2201 and 20.2202 relating to theft and reporting of incidents do have thresholds for activity and dose. Security should not be required for material that would not require an immediate report under these sections. The security requirements in 10CFR20 are also inconsistent with the limits for unlicensed material, such as, exempt quantities or generally licensed items.

5. Posting of containers and laboratories should be considered a security measure. For most hazardous materials in the laboratory, identifying the hazard is considered to be a sufficient precaution. It is a security measure, because it provides notification that a material is hazardous and discourages unauthorized use.

Thank you for your consideration of these comments. The opinions expressed above reflect my professional judgement as a health physicist and do not have any official endorsement of Penn State University.

Sincerely,



Rodger W. Granlund  
University Health Physicist