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Secretary  
US Nuclear Regulatory Commission  
Washington, DC 20555

Att: Docketing & Service Branch

re: Federal Register Notice, Vol. 59, number 38  
February 25, 1994  
Disposal of radioactive material by release  
into sanitary sewer systems.

Gentlemen:

Health Physics Associates, Inc. (Lenhartsville, PA) wishes to offer comments on the referenced advanced notice of proposed rulemaking. We believe this issue is only one of many that the Commission will be faced with following the revision of Part 20.

1. Forms of Material for Disposal - The question should go beyond whether the material is soluble upon discharge to what is the likelihood of the radioactive material remaining soluble within the system and not precipitating out. However, the Commission also has to realize that no matter what it permits, someone will find a way to defeat reasonable safeguards. The Commission has to balance the needs of the public with the needs of licensees. And while common sense dictates that protection of the public must take precedence, that decision must be based on real data and not on computer modeling using unrealistic "worst case" scenarios. The concept of someone ingesting sewage water at the point of release from a licensee's control is highly unrealistic.

If new technologies of sewage treatment cause reconcentration, an industry will develop to address that problem and prevent public irradiation above whatever limit is ultimately set.

2. Total Quantity of Material - In working with licensees who wished to utilize sewer discharge as a method, the limiting factor in most cases is the annual limit.

The limits adopted must reflect real risk. For example, there is probably no risk to sewage workers from tritium, carbon 14, and other beta emitters since ingestion is improbable and volatilization and inhalation does not appear to be very likely. In this case, limits should be based on the potential for downstream intake by a water treatment plant. In the case of a

soluble discharge of cobalt 57 or 60, perhaps the limits should be based on the potential for precipitation and concentration in the sludge, with subsequent external irradiation of sewage plant workers.

The formulation of sewage discharge limits may become a complicated project that should not be trivialized with a simplistic approach that will eliminate this avenue of disposal for a large number of research facilities. If the Commission takes the easy way out, they may find they will have made a significant contribution to the elimination of R&D efforts in this country. Then where will our new drugs come from? How will new industrial applications be developed? What will happen to the economic base of this country as we force R&D off-shore? How will the nuclear reactor discharges be truly ALARA if the replacement power production methods carry a far greater risk to the workers or society? The NRC has to begin looking at the impact its decisions will have in forcing the adoption of more hazardous non-radiological technologies. The Commission has to stop hiding behind the excuse that, "The Atomic Energy Act (AEA) does not include that in our responsibility." If the AEA includes the concept of ALARA, which includes the concept of benefit, cost, and total societal impact, the Commission has to begin including the impact on society from non-radiological technologies in its decision making process.

The question of a licensee providing a 24 hour notice to a sewage treatment plant is meaningless. This will become another instance of added record keeping and cost to licensees that offers no protection or potential dose reduction to the public or the workers at a sewage plant. What will the plant do, send its workers home the next day? Very few, if any, sewage plants have personnel that are familiar with radiological units or concepts. How will a plant manager assess the difference in risk potential, or even the occurrence of detectable radioactivity between discharges from licensees, hospital in-patients, hospital out-patients, infiltration from NORM in the ground and groundwater, and infiltration of surface water containing fallout. Such notification is another example of a meaningless mandate by government that carries added cost to those regulated, but offers no usable information to government. It will, however, increase costs to both licensees and government, if only due to the added records storage costs for government (including sewage plants). And all of this without any benefit, whatsoever.

3. Types of Limits - Limits must be based on realistic pathways and include both internal and external exposure as appropriate. It appears, on the surface, that the internal and external pathways have different populations at risk. For example, it

does not appear likely that a worker in a sewer plant will be exposed to a pathway including ingestion, but will to a pathway including concentration in sludge with subsequent external exposure. Even if a worker were to swallow a mouthful of sewage, the real risk is from biological pathogens and possibly chemical toxins, rather than a low probability, long term risk of radiation induced cancer or leukemia.

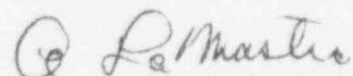
The Commission should set limits for each radionuclide based on whether it poses an internal or external risk. This should be further divided into whether the risk is due to the presence in raw sewage (perhaps those highly volatile forms that are also soluble if any exist), raw river water (accumulation and concentrated in aquatic life forms and for such uses as fire fighting in some large cities where personnel could be directly exposed), and by way of water that is withdrawn to be treated and distributed as potable water.

The question of types of limits appears to reinforce the concern that we are dealing with a complicated issue that may not have an easy solution. The Commission should consider the real impact its decisions will have on the regulated industry. Too often the NRC and other regulatory agencies perform inadequate financial impact assessments. Given the long term projections for a poor economy, impractical consideration of the impact on the regulated industry may drive many licensees to discontinue the use of radionuclides in research and either discontinue research or use more hazardous non-radiological methods.

4. Exemption of Patient Excreta - It is not known how the NRC can, in all fairness and logic, apply strict control of in-patient excreta while realizing that there is probably a larger total activity of out-patient excreta that enters the sewage system.

We hope these comments are useful in this early stage of regulatory development.

Sincerely,



Anthony LaMastra  
Certified Health Physicist