ACNP/SNM

American College of Nuclear Physicians/Society of Nuclear Medicine

GOVERNMENT RELATIONS OFFICE

July 10, 1997

Dr. Donald A. Cool
Director
Division of Industrial and Medical Nuclear Safety
U.S. Nuclear Regulatory Commission
MS T8F5
Washington, DC 20555

Dear Dr. Cool:

We understand that the Nuclear Regulatory Commission will soon convene a working group to begin discussing the revision of 10 CFR 35. While the American College of Nuclear Physicians (ACNP) and the Society of Nuclear Medicine (SNM) will be submitting comprehensive comments to the Commission, we believe that our Strategic Assessment Testimony for DSI # 7 is an excellent starting point for these discussions. This testimony addresses both the diagnostic and therapeutic nuclear medicine disciplines and represents the current position of the professional community. We offer these comments again at this time in the spirit of engaging in a constructive dialogue, rather than simply responding to Commission proposals.

We have also begun to review the issues raised in SECY 97-115, issued on June 13, 1997, and believe that it raises several issues that warrant further discussion and refinement within our organizations. We intend to respond to these issues as well as to respond to issues raised by the Commission staff in the first document it issues for comment.

In the meantime, feel free to call upon the resources of the ACNP and SNM should there be any additional information that we can provide to you and your staff. For further information, please contact Mr. David Nichols, Director of Government Relations at (703) 708-9773.

Sincerely,

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Following are comments regarding DSI number seven from the American College of Nuclear Physicians and the Society of Nuclear Medicine.

I. Introduction:

The American College of Nuclear Physicians (ACNP) and the Society of Nuclear Medicine (SNM) are pleased to offer comments to the Nuclear Regulatory Commission (NRC) on Strategic Assessment Issue number 7 concerning Materials / Medical Oversight. These comments expand upon our oral testimony presented at the public hearing on October 24, 1996. This opportunity to reassess NRC activities is long overdue and we look forward to working with the Commission to address some of the issues raised during this process. In addition, we hope that the Commission will closely evaluate the testimony submitted by ACNP and SNM, and move forward promptly with proposed rulemakings.

In determining the proper regulatory framework for Nuclear Medicine, it is important to focus on what Nuclear Medicine does, and does not do. Nuclear Medicine is a medical specialty which uses safe, painless, and cost effective techniques both to image the body and treat disease. Nuclear Medicine imaging is unique in that it documents organ function and structure, in contrast to diagnostic radiology, which is based upon anatomy. It is a way to gather medical information that may otherwise be unavailable, require surgery or necessitate more expensive diagnostic tests. As an integral part of patient care, Nuclear Medicine is used in the diagnosis, management, treatment, and prevention of serious disease. Nuclear Medicine imaging procedures often identify abnormalities very early in the progression of a disease, long before these medical problems are apparent with other diagnostic tests. This early detection allows for treatment of the disease early in its course, when the prognosis may be more optimistic.

To accomplish this end, Nuclear Medicine uses very small amounts of radioactive materials, or radiopharmaceuticals, to diagnose and treat disease. Radiopharmaceuticals are substances that are attracted to specific organs, bones, or tissues. When radiopharmaceuticals are introduced into the body, they produce emissions. A special type of camera, a gamma or PET camera, is used to transform these emissions into images and data which provide information about the areas of the body being imaged. Common diagnostic procedures include cardiac stress tests to analyze heart function, bone scans for orthopedic injuries or cancer which has spread from other organs, lung scans for blood clots, liver, spleen and gall bladder procedures to diagnose abnormal function or blockages, and thyroid scanning for all types of thyroid disease.

Primarily a diagnostic tool, well over ten million Nuclear Medicine procedures are performed each year. The specialty has an exemplary safety record, far better than most over the counter drugs. In addition to its diagnostic uses, Nuclear Medicine also provides valuable therapeutic applications such as treatment of hyperthyroidism, thyroid cancer, blood imbalances and pain relief from certain types of bone cancers. There are 60-70,000 therapeutic Nuclear Medicine procedures conducted each year. Therapeutic Nuclear Medicine is exceptionally safe, being the preferred method of treatment for many diseases having many fewer side effects and complications than alternative treatment methods.

Radiation Oncology, which is not a part of Nuclear Medicine, generally uses radioactive devices or external sources of radiation to deliver palliative or curative doses of radiation to a previously well defined site of disease. Radiation Oncology is generally considered to pose a greater risk than therapeutic Nuclear Medicine in that it cannot target radiation to the location of the disease without also irradiating the surrounding tissue.

To contrast Nuclear Medicine and Radiation Oncology, in 99.5% of Nuclear Medicine applications, drugs tagged with radioactive material are used to diagnose disease, and in only the remaining 0.5% of cases are radioactive drugs used for therapeutic purposes. Radiation Oncology uses radioactive devices or machines to produce external sources of radiation for the treatment of disease, and is 100% therapeutic in nature.

For over 20 years the NRC has steadily increased its regulation of Nuclear Medicine despite minimal changes in the materials used, the materials' applications in medicine, and the absence of any evidence of significant problems. The regulations and associated paperwork burdens contribute substantially to the costs of providing clinically necessary diagnostic and therapeutic Nuclear Medicine procedures. The Office of Management and Budget has affirmed this belief by originally overturning the paperwork associated with the Quality Management Rule. In addition, the National Academy of Sciences - Institute of Medicine report concluded that NRC's current regulatory procedures are unjustifiably intense and burdensome, that they may have compromised the availability of benefits of radiation, and that they do not decrease the already minuscule risks of medical use of ionizing radiation in any meaningful way.[1]

In consideration of the national interest to improve while also reducing the cost of quality healthcare, it is imperative that regulatory agencies, such as the NRC, assume responsibility for the societal impact of their actions. For the purpose of this testimony we would like to focus on three primary areas over which the agency currently has jurisdiction. They include: Diagnostic Nuclear Medicine, Therapeutic Nuclear Medicine, and Nuclear Pharmacy Regulation.

II. Diagnostic Nuclear Medicine:

As mentioned above, over 10 million diagnostic Nuclear Medicine procedures are performed each year. They involve low level tracer amounts of material which are used to diagnose disease states in every major organ of the body. The safety record of these tracers is exemplary and we are aware of no deaths or significant injuries attributed to radiation safety issues in at least the last 20 years. To amplify this point, we offer the following data from the NAS-IOM report. The NAS-IOM committee concluded that an estimate for diagnostic misadministrations (Agreement states and NRC regulated states combined) is 0.00012 percent of all such administrations or 1.3 per million.[2] Of these few misadministrations, the dose levels are so minimal as to pose no risk of acute or late radiation injury to the patient.

[1] NAS-IOM Report "Radiation in Medicine, A Need for Regulatory Reform" 1996; p. 173
[2] Ibid., p. 118

As a result of their common usage in both 1) hospitals and 2) outpatient settings around the country and their emergence as a mainstay in health care delivery systems, we feel that the NRC needs to re-evaluate the current attitude towards their regulation. As pointed out in option 3 of DSI # 7, the agency is considering decreasing oversight into low - risk activities.

We would like to clearly state that diagnostic Nuclear Medicine procedures are extremely low-risk and should be included under a broad general license provision in 10 CFR 31. A simple and effective way to license a medical facility would be to obtain 1. the name, address, and telephone number of the facility, 2. the name of the chief administrator, the name of the radiation manager 3. the categories of activities (e.g. diagnostic Nuclear Medicine, therapeutic Nuclear Medicine, commercial or non commercial nuclear pharmacy, biomedical research, teaching, etc.) 4. any sealed or unsealed sources of radioactive material that could become hazardous in the event of a calamity such as a fire, earthquake, terrorist activity (bombing), massive civil disobedience (riot), flood, etc. Such material could be a Cs-137 blood irradiator, or amounts of I-131 greater than a curie for example. Small amounts of material would not be of concern. Since all Authorized Practitioners (AP) would be qualified to handle RAM, they would simply carry out their professional activities in accordance with the standards of 10 CFR part 20, applicable State medicine and pharmacy law, and any other related laws.

Inspections would simply compare the individual AP's practice with the standards in 10 CFR part 20. ACNP and SNM would recommend a prestart-up inspection, and inspection when significant changes are contemplated in the practice activities. It is also important to note that these activities are only considered low-risk when handled by appropriately trained individuals. Authorized practitioners must demonstrate a high level of competence in (1) handling and management of radioactive material, (2) basic nuclear and radiation sciences, and (3) understanding compliance with the basic radiation safety standards of the United States. Evidence of mastery may take the form of a records review of previous education, training, and experience, and/or written and/or oral examinations. The NRC should not however, review purely medical or pharmacy qualifications except for the existence of licensure. Practice privilege committees, the management of medical institutions and medical and pharmacy practices, and State medical and pharmacy boards will make determinations of professional competence as needed. The NRC is responsible only for the safe use of radioactive material for protection of workers, members of the general public and the environment.

The following represents language that ACNP and SNM support for a general license for diagnostic Nuclear Medicine.

A general license is hereby issued to any physician, podiatrist, dentist, veterinarian (i.e. authorized practitioner as defined in (A) below) in the practice of diagnostic Nuclear Medicine in a laboratory, office, hospital, or research institute, to receive, acquire, possess, transfer, or use in accordance with the provisions in the paragraph below:

(A) Physician, dentist, podiatrist, veterinarian training and experience requirements.
The NRC shall require an individual fulfilling the responsibilities of an Authorized Practitioner to be an individual who is licensed or otherwise authorized by a state or federal agency to prescribe medication, ionizing radiation, or treatment for medical (veterinary) care and who: (1) is certified by one of the following: (a) American Board of Nuclear Medicine; (b) American Osteopathic Board of Nuclear Medicine; (c) Royal College of Physicians and Surgeons of Canada in Nuclear Medicine; (d) The American Board of Radiology in Diagnostic or Nuclear Radiology; or (2) has knowledge equivalent in radiation safety and the appropriate use of ionizing radiation-emitting drugs and devices in medical (veterinary) care and research to that required by one of the Boards mentioned above (Suggestion: When needed, individuals may be evaluated and approved by a review of the Advisory Committee for the Medical Uses of Isotopes.)
(B) A person shall not receive, acquire, possess, use, administer, or transfer byproduct material under the general license established above unless that person: (1) Has filed Form NRC 483, "Registration Certificate - Diagnostic Nuclear Medicine with byproduct material under General License," with the Director of Nuclear Material Safety and Safeguards, USNRC, Washington DC 20555 and received a validated copy of form NRC 483 with a registration number assigned; and that person complies with the following: (2) Store, use, and dispose of licensed material in accordance with the requirements in 10 CFR Part 20, and any other parts required,(if these exist they must be listed), and (3) The general licensee shall not transfer the byproduct material except by transfer to a person authorized to receive it by a license pursuant to this Agency or from an Agreement State, and (4) The registrant shall report in writing to the Director of NMSS any changes in the information furnished by him in the Registration Certificate (NRC 483) within 30 days after the effective date of such change.

This license would recognize the use of material and require annual reporting of the continued use of that material and nothing more. We are concerned that a periodic audit program to assess performance would create a scenario similar to the quality management rule and we feel that this is unnecessary. This would also remove many of the prescriptive requirements in 10 CFR 35 that currently exist.

A model to which to compare the proposed General License:
The Drug Enforcement Administration (DEA) licenses all medical practitioners who use Controlled Substances in their practice. Without getting into the details of how DEA licenses, inspects, and controls, it is useful to examine some similarities and differences between Controlled Substances and Radioactive Material (RAM) used in medicine. Controlled Substances are highly abuseable, sought after, illegally manufactured, diverted for profit, i.e., must be protected from theft, as they have a proven value to the criminal. We do not believe that any RAM used in medicine has any similar potential. Controlled Substances must be used with great care in patients because, beside being potentially habit forming, can be lethal if overdosed, and the difference between therapeutic quantities and lethal quantities is relatively small. The medical use of RAM is not habit forming, and for 99.5% (diagnostic uses) it would be nearly impossible to physically administer a quantity large enough to be lethal.

For the few therapeutic items we use, the difference in quantity between therapeutic and lethal is very large, and for many reasons it is unlikely that a licensee would ever have a lethal quantity on hand (reasons like cost and decay play a large part in limiting "on-hand" quantities). Proper use of Controlled Substances is taught in professional school, in internships, and is part of the licensing process. Thus the DEA does not require additional training to issue a license. Use of RAM and the radiation safety aspects of handling RAM in medicine are not taught in professional school (nor is the radiation safety aspect of RAM), some basic knowledge is learned in internships and residencies. This basic level is learned only because physicians must know the risks associated with the tests they are ordering. Thus it is unreasonable for the NRC to issue General Licenses to practitioners without having some assurance that, at a minimum, the radiation safety aspects of the use of RAM in medicine can be adequately performed by the practitioner. Thus the NRC should have a minimum level of training on the radiation safety aspects of the use of the material they regulate. This would be consistent with the way the DEA operates, and the DEA regulates material with a much higher overall risk to the public.

Controlled Substances are regulated by DEA licensing and implementation of careful controls on the sale, distribution, dispensing, and security of Controlled Substances. DEA licensees may buy, sell, or distribute only to other DEA licensees. They may prescribe, dispense, or administer Controlled Substances to or for their patients but must maintain careful records of inventory. Penalties for inventory discrepancies are severe. Prescribing, dispensing, or administering for other than medical use is also severely penalized. Controlled Substances must be secured against theft, and there are requirements for reporting loss of control. Compare this level of control with the level of control the NRC places on the use of RAM in medicine. There is no QM rule for Controlled Substances. There is no requirement for measuring the dose of a Controlled Substance or keeping records of the measurement. There are no misadministration or notifications requirements for Controlled Substance's usage.

III. Therapeutic Nuclear Medicine

The use of unsealed radioactive material in medicine in quantities sufficient to treat various medical conditions is the practice of therapeutic Nuclear Medicine. This comprises about 0.5% of all of Nuclear Medicine (approximately 60-70,000 procedures per year). ACNP and SNM believe that further review of the decision to classify therapeutic Nuclear Medicine (the use of radiopharmaceuticals for therapy) as a high risk activity is necessary. The safety record that exemplifies the performance of diagnostic Nuclear Medicine is very similar to that of therapeutic Nuclear Medicine. While higher doses are delivered to the patient in therapeutic Nuclear Medicine, no patient has died from a radiation safety related issue in the last 20 years. The NAS-IOM report estimated that the rate of therapeutic misadministrations for both Agreement States and NRC states is approximately 0.002 % or 1 in 50,000 procedures.[3] The report went on to question whether "adverse events in radiation medicine are sufficiently widespread or serious to warrant the current burdens of regulation now directed at the field."[4] We believe they are not.

[3] Ibid., p. 119
[4] Ibid., p. 125

Therapeutic Nuclear Medicine faces significant growth over the coming years and regulation above and beyond what is necessary to protect public health and safety could stifle this growth. The future lies in the use of radiolabeled bio-molecules that can target a diseased tissue and deliver the radiation directly to the site, minimizing irradiation to nearby health tissue.

For these reasons, the ACNP and SNM believe that a mix of option two and three, as listed in DSI number 7 needs to take place. Obviously, more discussion is required between the Commission, the staff, and the regulated community regarding the safety factors surrounding therapeutic Nuclear Medicine. This issue would be best served through an enhanced participatory workshop with organizations such as The American College of Nuclear Physicians, the Society of Nuclear Medicine, the American College of Nuclear Medicine and the American College of Radiology, all of which represent therapeutic Nuclear Medicine stakeholders. This workshop would discuss some of the utilization and risk involved with therapeutic Nuclear Medicine and lay the groundwork for a proposed rule from NRC. We believe that the workshop would show that therapeutic Nuclear Medicine is a significantly lower risk than originally believed by NRC. If this is the conclusion, then a simple general license may be all that is necessary to protect public health and safety.

ACNP/SNM contend that a patient in nuclear medicine is not a member of the general public. A patient in surgery is adequately protected by the existing systems that protect patients in general. Nuclear medicine patients are adequately protected by these same systems, the NRC does not need to intervene radiologically on the patients behalf. Every state and all the federal hospital systems have administrative systems in place to ensure an adequate or appropriate level of care. ACNP and SNM do not believe that nuclear requires special attention from another federal agency.

We would also like to suggest that a model for regulation of therapeutic Nuclear Medicine, if necessary, can be found in a letter from ACNP/SNM to Chairman Jackson regarding the revisions to 10 CFR 35. A copy of that letter is attached to this testimony.

IV. Nuclear Pharmacy

Nuclear pharmacy is a state licensed professional activity where radioactive drugs are prepared for patients and dispensed to Authorized Practitioners, as law prohibits dispensing RAM directly to a patient. The individual activities of the licensed professionals is what is examined by the State Boards of Pharmacy. It is the licensed professional's credentials and practice skills that make the activity of pharmacy practice safe, not the process itself. Pharmacy practice is the preparation of patient specific drugs, this requires maximum practice flexibility. At the most basic level, the activities within a nuclear pharmacy are nearly identical to the activities within the isotope preparation lab of a Nuclear Medicine department. The major difference lies in the scale. A busy Nuclear Medicine department may prepare doses for 50 or more patients per day, while a busy nuclear pharmacy may prepare doses for 10 or more busy Nuclear Medicine departments. If the preparation of doses on a small scale with a minimum of safety equipment and personnel is low risk in a Nuclear Medicine department setting, the preparation of doses on a large scale, in a fully equipped and staffed pharmacy is also low risk.

Risk to the general public is minimized by nuclear pharmacy practice because of the increased efficiency of scale. When efficiency of scale is applied to ordering and use of material, and to disposal of waste, a reduction in public dose is achieved. Generally, when exposure alone is looked at, nuclear pharmacies are better equipped to prepare radioactive drugs with minimal exposure than technologist prepared radiopharmaceuticals in a Nuclear Medicine department. When radiopharmaceutical expertise is looked at alone, clearly nuclear pharmacists have the advantage over technologists. The combination of efficiency of scale and expertise in preparation and handling provides improved safety in the use of radioactive drugs, this improved safety can be directly translated into a reduction in risk to the public. Thus, nuclear pharmacy is a low risk activity, and an activity that contributes to the assignment of Nuclear Medicine to the low risk category.

Nuclear pharmacies generally provide patient specific, prepared radioactive drugs to the authorized user pursuant to an order or prescription. Manufacturers generally prepare radioactive drugs on a large scale, in multi-dose vials, without any patient specificity, and sell these drugs to either pharmacies or authorized users. These manufacturers have no flexibility to prepare these drugs in any manner other than what their FDA license allows. Manufacturers need no flexibility because they are forbidden from preparing patient specific doses pursuant to prescriptions. Manufacturers are always regulated at the Federal level by the FDA, and many times at the State level by a State level FDA. The regulatory process is directed at control of the manufacturing activity, not an examination of the personnel involved or their credentials. The underlying philosophy is that if the licensed process is run as licensed it will produce a safe product, independent of the personnel employed. Because of the significant differences between nuclear pharmacy and radiopharmaceutical manufacturing activities ACNP/SNM support a General License regulatory method for nuclear pharmacy, and maintenance of the existing regulatory process for FDA licensed radiopharmaceutical manufacturers. ACNP/SNM feel that nuclear pharmacy should be regulated the way we propose nuclear medicine be regulated, that is as State Licensed Professional Activity using the General License regulatory approach.

Based on the above rationale, we would recommend the incorporation of the following into a general license for nuclear pharmacies:

A general license is hereby issued to any pharmacist, (i.e. authorized nuclear pharmacist as defined in (a) below) in the practice nuclear pharmacy, to receive, acquire, possess, transfer, or use in accordance with the provisions in the paragraphs below:

*(A) **Pharmacist training and experience requirements (Authorized Nuclear Pharmacist Training).** A licensee shall require an individual fulfilling the responsibilities of an Authorized Nuclear Pharmacist to be an individual who is licensed or otherwise authorized by a state or federal agency to practice pharmacy, and who: (a) is certified by: (1) The Board of Pharmaceutical Specialties in nuclear pharmacy; or (b) has knowledge equivalent in radiation safety to that required by the Board mentioned above (Suggestion: Individuals may be evaluated and approved by a review of the Advisory Committee for the Medical Uses of Isotopes as needed.)*

(b) A pharmacist shall not receive, acquire, possess, use, or transfer byproduct material under the general license established above unless that pharmacist: (1) Has filed Form NRC 483, "Registration Certificate - Nuclear Pharmacy with byproduct material under General License," with the Director of Nuclear Material Safety and Safeguards, USNRC, Washington DC 20555 and received a validated copy of form NRC 483 with a registration number assigned; and that person complies with the following: (2) Store, use, and dispose of licensed material in accordance with the requirements in 10 CFR Part 20, and any other parts required (must be listed here if any exist), and (3) The general licensee shall not transfer the byproduct material except by transfer to a person authorized to receive it by a license pursuant to this Agency or from an Agreement State, and (4) The registrant shall report in writing to the Director of NMSS any changes in the information furnished by him in the Registration Certificate (NRC 483) within 30 days after the effective date of such change.

V. Conclusion

We hope that it is clear to NRC that the membership of ACNP and SNM, which represent over 12,000 Nuclear Medicine physicians, technologists, pharmacists, and scientists, favor a low risk approach of options two and three as listed in DSI # 7 for evaluating and eventually restructuring the regulation of Nuclear Medicine and nuclear pharmacy. A paradigm shift from prescriptive to performance based regulation, coupled with a determination of low risk is entirely appropriate. We also hope that NRC will engage in an open, participatory manner similar to the method used with other groups, e.g., the radiographers. ACNP and SNM remain committed to assist in this process as it moves forward.