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News

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*****Health care threatened by nuclear
confusion and disposal problems.

DALLAS--Medical radiation experts at The University of Texas Health Science Center have expressed concern that public fear, political manipulation and confusion over nuclear waste disposal may cause a major setback for a vital segment of medicine.

The closing of low-level nuclear disposal sites in particular, says Dr. Frederick Bonte, dean of Southwestern Medical School, is unnecessary and a threat to modern medicine.

"I can understand the concern over burial of fuel rods from a reactor, a high-grade hazard. I can understand concern of disposal of waste from a reactor that produces plutonium for weapons. That's highly lethal stuff. But in nuclear medicine we're not talking about a radiation hazard or biologically devastating material. We're talking about mildly radioactive refuse from research and everyday medical practice. And if there is no way of disposing of this material, research and medical management will be seriously impaired and for no good reason," the dean continued.

One of a handful of nuclear medicine pioneers, Bonte "grew up" in the discipline. Nuclear medicine was in relative infancy when he joined the faculty of Southwestern as its first chairman of radiology. Later he and his colleagues were to contribute to the development of "imaging," a now widely-used procedure using low-level radioactivity to produce "pictures" of the internal human body.

"Imaging is now very sophisticated. It is an invaluable tool of modern medicine," says Bonte. "Using radioactive chemicals and special detection devices, a physician can determine the location of cancers and other abnormal conditions undetectable by other methods. Without such tools, doctors and their patients would sacrifice a lot."

Bonte refers to the current trend in public and political circles of condemning disposal sites of low-level radioactive waste. Such sites in Nevada and Washington state have come to national attention because of their supposed threat to humans and the environment. Both locations were closed recently by the governors of those states, leaving only South Carolina as the disposal site for all low-level waste. All three sites are now open but subject to shut-down at any time. To complicate matters, storage capacities are limited and more red tape has been added to the disposal process.

Radiation, in one form or another, is ever-present in our daily lives. It is inescapable. As a natural consequence of solar and cosmic radiation, every person on earth receives a yearly dose of ionizing radiation equal to from five to 20 chest X-rays. At higher altitudes (on mountains and during some plane flights) where the atmosphere is thinner and therefore less protective, the radiation is much greater.

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First add nuclear waste

"This doesn't keep people inside on sunny days, and it certainly doesn't keep them from living in the mountains of Denver," says Dr. Ed Griffin, radiation safety officer for Southwestern. "I think the word itself--RADIATION--scares many people. They associate the word with images from Hiroshima or Army file films of nuclear explosion tests. But it's unfair to condemn, in one breath, all the nuclear sciences. What the physician and medical scientist uses is thousands, millions, even billions times less radioactive. There is a very big difference."

In nuclear medicine, slightly radioactive elements suspended in liquid solution are admitted to the bloodstream. Using clever techniques, practically any organ or region of the body can be made to selectively "accept" the solution, paving the way for accurate detection by sensitive equipment. Cancer cells, for example, would then appear different from normal tissue. The extent and exact location of some tumors can be determined using these methods.

Obviously, if the solutions were not of very low activity, they would be harmful to inner areas of the body only inches away from the target site. This is important to remember in a discussion about the safety of nuclear medicine: most of the elements, although technically radioactive, have an effective range of only inches, and the energy emitted is slight at most. In addition, and perhaps most important to the issue of disposal, the elements typically have very fast rates of decay or short "half lives." In most cases the elements become completely harmless in a few days. More controversial uses of nuclear energy--power plants, weaponry and commercial applications--employ radioactive elements which may be harmful for thousands of years and therefore must be handled differently.

As director of radiation safety for the whole health science center and Parkland Memorial Hospital, one of Griffin's responsibilities is to assure the safe handling and disposal of radioactive waste, the "leftovers" of medical treatment, tests and research.

"We go way beyond the federally established regulations for disposal of waste materials," says Griffin. "When you consider that federal regulations are already very safe and strict, and that our waste is typically a hundred or thousand times less than specified, you can be certain the risk to man and environment from the medical community is practically non-existent."

"The disposal sites must remain in operation," says Dean Bonte, "if medicine is to move ahead or even stay where it is. These diagnostic techniques are too important in everyday health care to be lost in the shuffle and scare over imagined dangers."

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