

June 15, 2009

Honorable Byron Dorgan, Chair
Honorable Robert Bennett, Ranking Minority Member
Subcommittee on Energy and Water Development
Senate Appropriations Committee

Honorable Peter J. Visclosky, Chair
Honorable Ed Pastor, Vice-Chair
Honorable Rodney P. Frelinghuysen, Ranking Minority Member
Subcommittee on Energy and Water Development
House Appropriations Committee

Re: U.S. production of Mo-99 for medical radioisotopes

Dear Sirs,

The United States today confronts a double crisis regarding medical radioisotopes that thousands of American patients rely on every day for diagnosis and treatment of their illnesses. The immediate threat arises from the absence of any U.S. producer of the key ingredient for such isotopes, Molybdenum-99 (Mo-99), necessitating reliance on imports from unreliable, aging foreign facilities. The longer-term danger stems from the fact that all major foreign suppliers produce these isotopes using nuclear weapons-grade, highly enriched uranium, the same material used in the Hiroshima atom bomb, which raises undesirable risks of nuclear proliferation and nuclear terrorism.

We, the undersigned – representing medical, non-proliferation, and academic perspectives – urge Congress to address both of these problems in this year’s Energy and Water Development appropriations bill by supporting expeditious domestic production of medical radioisotopes using low-enriched uranium (LEU), which is unsuitable for nuclear weapons. We urge Congress to provide sufficient funding to the National Nuclear Security Administration to commence domestic production of medical isotopes using LEU as quickly as possible.

The urgency is underscored by last month’s indefinite shutdown of the aging Canadian nuclear reactor that had been supplying nearly half of the world’s demand for medical isotopes, including the majority of the U.S. market.¹ Americans typically utilize nearly 20 million tests each year employing these isotopes,² but now must wait and see what fraction of that normal supply can be obtained from three fragile backup producers in Europe and South Africa, who utilize similarly aging reactors that are subject to unplanned shutdowns. During the last two years, unplanned shutdowns in Canada and

¹ David Akin, “Leaking reactor may be ‘gone for good’; Health crisis feared as Ont. facility shutdown could spark shortage of medical isotopes,” *Edmonton Journal*, May 21, 2009, www.edmontonjournal.com/Technology/Leaking+reactor+gone+good/1615106/story.html.

² Andrew J. Einstein, “Breaking America’s Dependence on Imported Molybdenum,” *Journal of the American College of Cardiology: Cardiovascular Imaging* 2 (2009): 369-371, <http://imaging.onlinejacc.org/cgi/content/full/2/3/369>.

Europe have repeatedly interrupted supply of these isotopes, delaying medical procedures for thousands of patients. The foreign suppliers continue to use bomb-grade uranium despite a report this year from the U.S. National Academies confirming that the same isotopes could be produced economically using low-enriched uranium.

Both of these problems could be addressed quickly and affordably with a single policy solution: Financial support from Congress for expeditious domestic production of medical isotopes using low-enriched uranium. The Department of Energy (DOE), in its FY 2010 budget justification, has requested such funding to “provide technical and financial support to the U.S. private sector to establish domestic production of the critical medical isotope Mo-99 using LEU.”³ At least two technical options are available. First, the nuclear reactor at the University of Missouri - Columbia could produce these isotopes by irradiating targets of low-enriched uranium, if the operator also obtains funding to construct a facility to process the targets. At a Nuclear Regulatory Commission meeting last month, university officials indicated that such a facility could produce at least half the U.S. demand for medical isotopes. The university’s target date for licensing and commercial operation of the processing facility, if adequate funding is obtained, is 2011. In case that date proves overly optimistic, Congress and DOE also should explore the interim measure of irradiating LEU targets in the Missouri reactor or elsewhere and processing them in an existing government facility. The second technical option, proposed by the firm Babcock & Wilcox, is to produce medical isotopes in small nuclear reactors with liquid cores of low-enriched uranium.

The 2009 National Academies study on medical isotopes declared unequivocally that there are –

No technical reasons that adequate quantities cannot be produced from LEU targets in the future. . . . Reliability of Mo-99 supply is likely to continue to be a serious problem for the United States in the early part of the next decade without new sources of Mo-99 supply. . . . [P]rivate companies that can provide new domestic supplies of Mo-99 to the market might not choose to compete without government assistance. . . . [Conversion to LEU targets] would have a negligible impact on the cost of common diagnostic imaging procedures. . . . [DOE should] examine options to share R&D costs with existing and potential new producers that could supply the U.S. market as a means to incentivize the conversion process and encourage new domestic production. . . . [Congress could also] provide temporary financial incentives for the production and/or purchase of LEU-based Mo-99.⁴

We endorse all of these NAS findings and recommendations. In particular, the most effective first step to address the current double threat to public health and nuclear security is for Congress to support domestic production of medical isotopes using LEU. This could include financial support to

³ “FY 2010 Congressional Budget Request,” Volume 1, DOE/CF-035, National Nuclear Security Administration, May 2009, p. 449.

⁴ “Medical Isotope Production Without Highly Enriched Uranium,” January 2009, National Research Council, National Academy of Sciences, pp. E.1 - E.5, 10.19, www.nap.edu/catalog.php?record_id=12569.

producers, financial incentives to purchasers, and the acceptance by DOE for disposal of the radioactive LEU waste resulting from production.

Even if Canada's reactor is temporarily restored to service, the immediate crisis will only be postponed slightly, because the 52-year-old reactor soon will be closed permanently, and Canada has canceled its planned replacement reactors. As Prime Minister Stephen Harper declared on June 10, 2009, "We anticipate Canada will be out of the business." The only way to ensure the supply of medical isotopes to American patients, while reducing risks of nuclear proliferation and nuclear terrorism, is to support expeditious domestic production of medical isotopes using LEU.

Thank you for your consideration of our views. We stand ready to provide further information upon request.

Sincerely,

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