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March 21, 1973

TO: BOARD OF DIRECTORS

RE: LEAD IN NUCLEAR MEDICINE

Gentlemen:

One of our basic public relations goals is to find stories which reflect currently upon various uses of lead and its properties, rather than using the defensive tone into which circumstances force us.

We think that the attached story from AMERICAN METAL MARKET and, which has been released to a number of other publications that we believe will use it, shows lead in a most favorable, as well as newsworthy and international light.

We are looking forward to more stories of this nature.

Sincerely,

Lewis E. Gage

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Director of Communications

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Attachment

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Nuclear Medicine May Be the 'Doctor' To Give Lead Industry That Robust Look

NEW YORK — While lead is taking a beating in some fields, due to environmental considerations, one bright spot for expanding consumption could be nuclear medicine.

The Lead Industries Association backed up this claim by pointing to the inherent dangers involved in using nuclear materials in places like hospitals.

Nuclear medicine has been used to diagnose internal cancer.

The process involves the injection of minute amounts of radioisotopes into the body.

The process has the advantage over X-rays by being more precise in locating the diseased area and determining the effectiveness of treatment.

But this science has one particular major disadvantage — radiation.

Various techniques have been developed to protect persons involved in nuclear isotopes from radiation.

Lead executives are optimistic over the fact that lead is currently the leading contender as the material to shield persons from nuclear radiation.

According to the Atomic Energy Commission, when other shield materials are considered, "comparisons are usually expressed in terms of lead because it represents the best practical shield for most applications."

Among other things, the AEC is responsible for establishing the radiation limits permitted in nuclear medicine, licensing doctors specializing in this science, and determining the thickness of shielding material for such applications as the lead shielding devices for radiopharmaceuticals.

Protective shields are required from the time the nuclear materials are shipped from the manufacturer until they are injected into the body. For example, the material is shipped to the user in special lead shielded devices.

Lead To The Rescue

Other special shielding devices are needed to store the material, and the storage shields themselves are in turn stored in lead-lined safes.

When the radio active material is being transferred from one shield device to another, the action takes place inside a radiation leak-proof, lead lined glove box, and technicians using it wear lead-impregnated gloves. Radiation protection in the form of hypodermic needle shields are need for nuclear medicine.

As the use of nuclear medicine expands, the LIA predicts a dramatic growth of lead consumption in this field. However, the LIA declined to give specific figures.

A number of companies are specializing in developing and producing nuclear medicine products. A leading firm in the field is Atomic Development Corp., Plainview, N.Y.

"Our company's success in the nuclear medicine product field is the result of its being built on a foundation of lead," Atomic president Pat Miola said. "Virtually everything we produce is either made entirely or partly of lead."

The company's product line ranges from containers used to ship and store nuclear medicine to accessory equipment for gigantic cancer detection scintillation scanners and cameras that can photographically scan the human body from head to toe.

The company's design department has developed a wide variety of lead radiation shielding products.

Saves Weight, Space

According to Miola, although lead's primary shielding property is mass, its use invariably saves weight and space. He also says the metal's cost and the ease with which it can be cast, extruded, rolled, machined or otherwise formed, combine to make it one of the most efficient and economical shielding materials.

Radiopharmaceutical shields and shipping devices are typical of the products the company casts from lead. To produce the devices, pig lead is melted and pured into round, cylinder-shaped molds with a hollow core. When the lead has cooled and the desired shape of the shield or shipping device has been formed, it is removed from the molds. If required, the sides of the devices are machined and then painted.

Molds also are used to produce the various types of caps that fit over the tops of the devices. Shield devices have lift-off caps while shipping devices usually pivot for opening.

A typical radioactive shield or shipping device that would be used to ship a radiopharmaceutical is about 3 inches high, has lead walls about 1½ inch thick, a ⅛ inch diameter hollow core, and weighs about two pounds.

In addition to its advantages of being the densest of any commonly available material and being available in a wide variety of forms, lead has another advantage with regard to its use as a radioactive shield material. Because lead does not become contaminated by neutrons or gamma rays, it may be used continuously without fear of its becoming a radioactive source itself by emitting harmful rays, the LIA claimed.

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