RADIATION TECHNOLOGY AS AN ALTERNATIVE TO METHYL BROMIDE

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ABSTRACT

Part of the world's physical environment, radiation is energy given off by a wide range of natural and human-made sources. The heat and light emitted by the sun or an electric light bulb, X-rays, microwaves and radio waves are all familiar examples. Radioactive isotopes of normally stable elements are also deliberately produced for use in health care and industrial applications. Cobalt 60 is one such deliberately produced isotope, widely used for cancer treatment, sterilization of medical disposable products and consumer goods, and in the treatment of foods.

Gamma irradiation systems, equipped with a cobalt 60 energy source, provide fast, efficient and reliable treatment of a number of products currently being treated with methyl bromide. Electron beam irradiators, which use machine-generated, accelerated electrons as a source of radiation, are also being explored as alternatives to methyl bromide.

This paper will provide an overview of irradiation technology - its history, development and use. System parameters will be discussed, including physical size, configuration and processing methodologies. The measurement of dose absorbed by the product, and the systems required to ensure proper dose uniformity, will also be discussed.

Other topics relevant to radiation processing systems include regulatory and licensing requirements, siting and approvals, and costs.