

Myth:

“Irradiation is too expensive.”

Reality:

There is no such thing as a free irradiated lunch. However, irradiation processing is not as expensive as many believe.

For all goods and services, one can breakdown the costs into two categories: “fixed costs” and “variable costs”. Fixed costs are those that do not rely on the amount of products or services produced. Building and equipment costs are typically “fixed”. On the other hand, costs that increase with increased production are “variable”. Typically these include raw material costs and hourly wages.

The costs for irradiation facilities are almost all fixed costs. There are very few variable costs associated with the process. The primary reason is that irradiation is a process involving no raw materials.

Initial capital requirements for an irradiation facility are relatively high. The cost for a commercial irradiator starts at over a million dollars and can typically cost several million dollars, depending on production capacity. This is a fixed cost. The amount of time and expense to train irradiator operators is most cost effective if they are employed full time; whether or not product is being processed. This is also a fixed cost. For gamma facilities, the cobalt-60 source is bought in increments and it is depleted whether or not the irradiator is processing product. Once again, a fixed cost. E-beam and X-ray irradiators use electricity to generate their radiation. For these irradiators, a major portion of their electricity costs are variable, but most of their other costs are fixed.

With most of the costs fixed, the cost to process a pound of product will depend on how many pounds of product are processed. Simplistically, if the fixed costs are \$1,000,000 per year and only one pound is processed, then the cost/pound is \$1,000,000! However, with the same fixed costs, processing 100,000,000 pounds, the cost would only be \$0.01 per pound.

Therefore, the trick to economically operating an irradiator is to run as much product through as practical. That is why most commercial irradiators try to operate 24/7/365.

If a company has enough product to irradiate, then it may be cost effective to purchase and operate their own irradiator. The more product, the lower the cost. On the other hand, if they do not have enough product to cover their fixed costs, then it will probably be more cost effective to contract with a service irradiation facility. However, a service facility has some costs that are greater than would be incurred by an in-house facility such as having to deal with multiple regulatory agencies due to the variety of products they may be irradiating. An in-house facility would only have to deal with regulators specific to their product. Contract services also have to have irradiation sales staffs, marketing, warehousing facilities and other components not required by in-house processors. And, the service providers need to generate a profit. Therefore the price/pound of using a service facility will be significantly higher than the cost/pound for an in-house facility assuming the in-house facility has a sufficient volume of product to process.

The relative expense of the product is dependent on the volume of the product being irradiated. However, how “expensive” it is depends on the value added by the process to the product.

If the benefit of irradiation is greater than the cost of the irradiation, then the process is not expensive. Today, many foods are irradiated...so one must conclude that it is not as expensive as many believe.

Russell N. Stein

GRAY*STAR, Inc.

www.GrayStarInc.com

GrayStarGenesis@aol.com

