Controlling losses—and pollution

The following article was written by Michael J. Boyer, president of Applied Engineering and Science, Chamblee, Georgia, on the request of Harold J. Sandvig of Cargill Inc., who serves as Associate Editor for JAOCS *News for Plant Safety.*

Having watched and worked with the fats and oils industry and its dealings with environmental issues over the past 20 years, I have observed a developing maturity and a responsible approach to environmental matters. The history of this is summarized through a series of anonymous quotations and paraphrasings from the fats and oils industry:

- 1968—"What environmental law?"
- 1970—"Does this really apply to us? It will all blow over."
- 1974—"The biggest, fattest catfish in the river live downstream from our discharge. Well, how much oil are we losing, anyway?"
- 1980—"We have spent a good deal of money on environmental control. Now it surely will all blow over."
- 1984—"Oil and product loss is money lost. We subsequently cannot afford the cost of pollution, and we will not tolerate it in our plants."

Today, the last statement, more than ever, reflects the very responsible, and, I believe, very practical attitude that the fats and oils industry has adopted towards environmental compliance. This was exemplified in the unprecedented large turnout of people at the environmental committee meeting and seminars at the AOCS meeting in Phoenix this past May.

In addition to being uneconomical, pollution is no longer acceptable. The public will not tolerate it, your company management will not tolerate it and your stockholders will not tolerate it—and, of course, the government, reflecting this attitude, will not tolerate it, either. If it previously were unclear whether this would all blow over, it now should be evident that, if environmental controls have continued to tighten during the administration of the past eight years, this trend can be expected to continue.

Where is all this headed? The main theme of environmental challenges of today and the next decade, I believe, is a recognition that they cannot be dealt with without considering process modifications and loss control at the same time. There are a number of areas where new and developing regulations will affect this industry. I have selected three areas which, in my opinion, will have the greatest impact on process changes and future capital investment for pollution abatement. These are discussed briefly.

- Handling contaminated stormwater runoff.
- Increasing wastewater pretreatment due to more stringent discharge requirements to municipal systems.
- Reducing pollution levels through process modification and control.

Contaminated stormwater

During the past six to eight years, the U.S. Environmental Protection Agency (EPA) and state regulatory agencies have wrestled with the problem of dealing with contaminated stormwater runoff. Prompting the more recent developments was a lawsuit filed and won by the Environmental Defense Fund against EPA. This action contested the manner in which EPA handled permitting stormwater discharges. The outcome resulted in amendments to the 1987 Clean Water Act that essentially require states to develop and implement regulations for monitoring and substantially reducing contaminate levels in stormwater runoff. These will be based on local water quality criteria and related factors.

As this problem generally relates to industry, states will develop and prioritize various classes of storm runoff contamination sources. However, it now is evident that industrial plant sites will be in the first class to be addressed. Final guidelines are scheduled for publication in the Fall of 1989, with monitoring and evaluation of individual plants occurring in 1989-1991. Major capital expenditures will be required during 1991-1994. Compliance will require a mixture of loss control improvements through Best Management Practices to reduce or prevent losses contributing to the problem, in addition to physical facilities for the collection and treatment of some quantity of plant site stormwater runoff.

Certain plants have been required to address this issue at this time due to unique environmental settings, particularly severe runoff problems or other circumstances. Our observations indicate that even average plant sites in this industry will be faced with significant challenges and expenditures to meet the anticipated requirements of these regulations.

Pretreatment

Most of the plants within the fats and oils industry pretreat industrial process wastewater and discharge to municipal sanitary sewage systems. With the exception of certain fatty chemical processes, these wastes generally are compatible with domestic wastes for treatment in municipal facilities.

In view of this, most processing plants have elected to pay surcharges and other sewer-use charges as the most cost-effective method for dealing with liquid waste disposal. Although surcharge costs to industry have continued to rise, the increases are about equal to the annual rate of inflation; generally, paying surcharge costs is preferable to the return-on-investment for capital additions to onsite treatment facilities.

However, a recent development affecting the industry is an increasing tendency of municipal sewage authorities to limit pretreated effluent pollutant levels to the equivalent of domestic waste. The clear implication of this action is large capital expenditures for expanded on site waste treatment facilities.

This is being driven primarily by increased pressure from state and federal regulatory agencies on municipalities to bring their final discharge into compliance. Another factor is federal pretreatment guidelines that affect some of the fatty chemical producers directly on a categorical basis.

Therefore, although these wastes are compatible with municipal wastes, the real-world situation dictates otherwise. This is certainly not being implemented on a universal basis, but is occurring with increasing frequency and can be expected to continue throughout the next decade.

Waste load and process loss control

This area encompasses items one and two and virtually every other aspect of environmental control in this industry. There is no doubt that the entire industry is in a state of change. Marketing and pricing decisions are restructuring how and where production and processing takes place. For example, many of the urban retail product processors have left the oil refining business and are buying refined, bleached, deodorized oil because of cost considerations.

Additionally, most of the current processing technology in fats and oils is relatively mature. With process maturity comes an inevitable industry restructuring and, with it, a parity in unit production costs.

What is the impact of this on waste handling? If production costs are at or near parity, it is our belief that waste management efficiency will continue to gain in importance as a major factor affecting profitability and ultimately, perhaps, dictate who will survive in the marketplace. We are certainly seeing signs of this already.

There is virtually no organic waste constituent from a fats and oils plant that cannot be sold for some edible or inedible use if it can be recovered—or not lost—in the process initially. Industry has generally come to this realization.

We are seeing and expect to continue to see increased emphasis on process modification and loss control as the most cost-effective means to meeting the environmental challenges of the next decade.