

# Handling and Transportation of Hazardous Materials and Hazardous Wastes: A Practical and Legal Perspective

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## ABSTRACT

An often unavoidable consequence of the manufacture of valuable products is the creation of hazardous materials and hazardous wastes. By "hazardous material" is meant the commercial product—a commodity of value which has hazardous properties that may be essential to its effectiveness. "Hazardous wastes" are byproducts that usually have little or no value to the company that generates them, but that usually result from manufacturing processes and must be managed to prevent injury to the public and the environment. (Of course, through the establishment of waste exchanges, one company's waste may become another company's feedstock, thereby eliminating or at least postponing the disposal problem.) The more stringent individual countries or regional groups of countries become in their regulation of hazardous wastes, the greater the incentive there is in those countries to export wastes to nations where requirements are less rigorous. Thus, the development of a world policy on hazardous waste appears to be worthwhile, but in considering such a policy, it is essential to learn from the mistakes others have made.

In the United States, an elaborate regulatory program has been established to govern handling of hazardous materials and wastes, and to guarantee the liability of parties involved in the process. Despite the massive effort and costs involved on the part of industry and government, progress has been limited. Unfortunately, all indications are that these regulatory burdens are due to increase with a consonant increase in costs, but without assurance of greater environmental or public benefit.

As a lawyer in private practice assisting corporations in dealing with such matters in United States and world commerce, I would like to offer my views on this experience. Some of the reasons underlying much of the lack of success of these programs are (a) overly broad regulatory coverage considering the available public and private resources, (b) the vagueness of the term "waste" and the unsuccessful effort to monitor it from creation to disposal, (c) a lack of geographical uniformity in requirements, and (d) proliferation of legal contests which drain resources of all parties but result in no improvement in the environment.

## BACKGROUND

Hazardous materials, i.e., commercial products of value that pose a threat of injury to people or property in transportation, have been regulated in the United States for most of this century. These requirements are published by the United States Department of Transportation (DOT), and are applicable to virtually all cargo moved within the United States, whether of US origin or from other countries.

Transportation of hazardous materials is regulated as well by other nations and by international bodies such as the United Nations, the International Convention concerning the Carriage of Goods by Rail (RID), the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), the International Maritime Organization (IMO), the International Air Transport Association (IATA), the International Civil Aviation Organization (ICAO), and others.

The focus of virtually all of these product regulation systems is on acute injury to people or adjacent freight, that might occur during transportation. Thus, the properties of explosion, flammability, corrosion, compression,

toxicity and radioactivity are closely governed. We are seeing the gradual expansion of regulatory coverage, however, to include materials that are hazardous only on chronic exposure, or that may lead to illness only years after exposure, or that may injure the environment but not people or cargo. Although this expansion is only now getting under way, I expect most hazardous materials regulatory systems in the world eventually will encompass such health and environmental hazards.

In 1980, within the United States, the Environmental Protection Agency (EPA) launched a new program of hazardous waste regulations. These regulations deal with contemporary disposal practices, not historical experience. The hazard definitions for wastes are similar but not the same as hazard definitions for products in transportation. The transportation of hazardous wastes is regulated by both DOT and EPA, in a fashion similar to but not the same as the transportation of hazardous materials.

Also in 1980, historical disposal practices were addressed in a new law in the United States, sometimes called Superfund but more properly entitled the Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA). CERCLA combined a rigid standard of strict liability, or liability-without-fault, for releases of hazardous substances to the environment, with a tax on the initial production of various common chemical feedstocks. The taxes are accumulated into a fund, and if parties charged with liability for clean-up of a dump site are unidentifiable or are insolvent, the fund is used to pay for the clean-up. Money collected under this statute from identifiable, solvent companies is used to reimburse the fund for clean-up expenditures. CERCLA deals only with damage to the environment and natural resources, not with personal injuries or damage to the property of adjacent landowners.

Despite serious questions regarding the effectiveness of these environmental programs in the USA, it is likely that they will be expanded to collect more taxes, and to cover more materials, more companies, and more types of injury, before any effort is undertaken to improve them. We are seeing a proliferation of new requirements, rather than improvement in the quality of current efforts.

I wish to discuss some of what I perceive to be the mistakes that have been made, with suggestions on improvement that may be utilized within the USA and in other countries and by international groups throughout the world, in developing a comprehensive approach to hazardous waste management.

## DEFINITION OF HAZARD IS TOO INCLUSIVE

A common problem in most hazardous wastes programs is that the terms, and consequently the coverage of the program, are too broad for industry and regulatory agencies to administer effectively. This breadth of terminology often is coupled with a general failure to recognize degrees of hazard.

"Hazard" is a subjective term, not readily quantifiable, and generally arbitrarily defined by drawing a line somewhere on a continuum of risk. Especially in new programs, there often is a fatal decision early in the process to regulate most conceivable degrees of hazard, regardless of the resources of government or industry to accommodate

regulations of such breadth.

For example, United States hazardous product transportation requirements define flammability with an upper flash point of 37.8 C (100 F). When EPA adopted definitions of hazard for wastes, however, they chose 60 C (140 F) as the upper limit for ignitability. This terminology necessarily brought within the regulated sphere many more materials as wastes than are regulated as finished products in transportation. Thus, a packaged detergent with a flash point over 37.8 C can move to market unregulated in transportation, but if it is damaged in the distribution system and must be discarded, then all hazardous waste regulations come into play, including waste transportation rules.

This had several immediate impacts. First, an already confusing system was made more complex and confusing. The distributor who is not advised of the hazard of the product because it is not regulated in transportation is somehow expected to know its hazards for the sake of disposal. Second, a much larger number of materials and companies came under waste regulation than were regulated in transportation, resulting in a much larger volume of regulated waste at a time when the capacity of landfill or other disposal facilities is becoming more scarce. Third, the larger volume of regulated companies spreads limited inspection and enforcement personnel even more thinly over the population of regulated parties.

This broader coverage was poorly justified in light of past experience and available public and private resources. Other hazard definitions for wastes are similarly inclusive, bringing in more materials and companies than the economy or the government's program can handle.

All of these excesses put crippling strains on the new system, and in my opinion are unnecessary at this time. In short, in the establishment of a regulatory system that will draw heavily on resources, regulating the most hazardous materials first in a program of manageable size is essential to success.

#### QUANTITIES REGULATED ARE TOO SMALL

Under EPA current regulatory program, any company that generates less than 1,000 kilos (2,200 lb) of hazardous waste per month is exempt from most hazardous waste regulations. Legislation is now pending which will lower this level to 100 kilos (220 lb). Once a company exceeds that level, every hazardous waste in every size container is covered. Especially in the consumer product field, this has imposed a substantial burden on manufacturers disposing of small packages of returned or off-specification materials.

As with the excessive breadth of definitions, regulating all packaging sizes over the 1,000 kilo threshold has unnecessarily drained the resources of generating, transporting, disposal and regulatory bodies. Compliance with the letter of the law is virtually impossible. Adoption of a unit quantity threshold would have served EPA better and would have kept the size of the initial program more within manageable limits for both industry and government.

#### CRADLE-TO-GRAVE CONTROL IS A MYTH

The US regulatory program has been described as a "cradle-to-grave" system, where wastes are controlled at all phases. Although this has some public appeal, it is untrue for several reasons.

The term "waste" is another one which is very subjective and not susceptible to quantification. In fact, it is a mental concept—a raw material does not become a waste until

someone decides to discard it. Until that moment, the material can sit at the company site outside the scope of hazardous waste regulations. Some corporations devote significant effort to deferral of a decision to discard any material, thereby postponing applicability of waste rules. Thus, although the system may control waste from the cradle, the birth itself is in the mind of the generator and can be deferred indefinitely.

The key to EPA's control system is the manifest—a document that records the existence of a waste and is used to transfer that waste to transporters and to treatment, storage or disposal facilities. The primary problem of the manifest, and the reason it provides little of the control it is proclaimed to provide, is the presumption of honesty on which it is based. It is *assumed* that the waste generator will be law abiding, will undertake the effort to be familiar with regulatory requirements, and will attempt to meet those requirements. With finished products, where a company has a variety of incentives to compliance, including customer relations, public relations and product liability, this type of assumption may be valid. With waste, it is not. It is human nature that many people are willing to avoid the hazardous waste system by not completing a manifest.

Coupled with this undue reliance on the manifest system is a failure on the part of government to visit the point of generation. If a company does not announce its waste activity, there is little likelihood that an inspector will visit the site and, once the waste is in transit, there is virtually no way to identify it as a regulated waste without elaborate mobile test facilities.

Thus, the generator who purposely fails to announce his role as a hazardous waste generator and does not complete a manifest is likely to avoid the enforcement system. In addition to avoiding enforcement, this generator also avoids the expense of proper disposal. In many jurisdictions in the United States, a tax is imposed on the volume of hazardous waste produced, and so the unscrupulous generator avoids the tax as well.

In short, all of the economic and social incentives resulting from the system encourage an unscrupulous generator of hazardous waste to bypass the system, and there is no effective enforcement mechanism to counterbalance this motivation. We also find too many in the transportation community who willingly accept the high fee for transporting and discarding hazardous waste, and then falsify the manifest and dump the load along the highway or in an unregulated dump site. As with the unscrupulous generator, it is extremely difficult to enforce the rules against an unscrupulous transporter, and all the incentives are present to encourage the transporter to bypass the system. Not surprisingly, many do.

For the responsible company attempting to comply with the law, there is only negative public exposure and expense. After all, in the eye of the public or the press there is no *good* hazardous waste generator. The diminishing number of qualified disposal sites, combined with the escalating cost for the services of these sites and the taxes imposed on the volume of waste, increase the burden on the responsible company and heighten the competitive advantage of his less responsible competitor.

It is essential, therefore, in designing any regulatory program, in any country, to make effective enforcement against dishonest generators and transporters a key part of that program. Adoption and enforcement of regulations only against the responsible company simply causes irresponsible companies to flourish. The public ultimately suffers from the wrongs to the environment caused by the unscrupulous generator or transporter, and the increased costs passed on by the responsible companies.

### LACK OF REGULATORY UNIFORMITY UNDERMINES COMPLIANCE

As already noted, there are several discrepancies between hazardous product and hazardous waste transportation regulations. This is exacerbated by the involvement of individual state governments in the United States which each have their own hazardous waste programs, with few of them being the same as the federal program or that of any other state. The most evident discrepancy is in the manifest, with many states insisting on use of their own form (which differs from other states' forms) for wastes generated, discarded or moving through that state. Lack of a uniform manifest system, where many borders will be crossed, is destructive to compliance. Lack of uniformity generally destroys compliance, especially for companies having plant sites in multiple jurisdictions and shipping to disposal sites in many more jurisdictions.

### REGULATORY ACTION AGAINST DUMP SITES HAS BEEN INEFFECTIVE

Under CERCLA (Superfund) which is aimed at historic disposal sites and the companies involved in those sites, any one company can be held liable for the entire cost of clean-up of the site, regardless of the volume of waste sent there or the level of hazard of that waste or when it was generated. This is true whether the actions of the generator were legal at the time, whether the generator had knowledge of the disposal, or whether the site operator mismanaged the wastes.

This legal concept, where any one company pays for all, is called "joint and several liability," and it is having an enormous impact on all companies under the law. The target company must initiate its own lawsuits against all other parties, who in turn may countersue or bring in other companies as joint defendants. This causes an expanding ripple of lawsuits, all designed to spread the liability to as

many other parties as possible so the target company's share is reduced.

These suits often are initiated before the total cost of clean-up or even the full dimension of the problem is known. The litigation takes years. During this time, the matter stands as a cloud over the assets of the company, impairing relations with stockholders, customers, lending institutions, and potential merger or acquisition partners.

As you can imagine, only the lawyers prosper under this system. To date, it has not resulted in major clean-up of a significant number of the thousands of sites which have been identified.

The difficulties encountered to date under this new liability system are enormous. They are small, however, compared with those anticipated under legislation now being considered in the US Congress, which would give *private* parties the right to sue for damages for personal injuries and damage to private property. These so-called "Toxic Victim Compensation Acts" are expected to enhance the cost of doing business dramatically.

Companies are finding that with the new liabilities created by the legislature, and the dimension of costs involved, their current and past insurance coverage is totally inadequate. In some instances, policies clearly do not provide coverage. In others, there is coverage, but not enough, while in still others the insurance companies are simply refusing to honor the claims, resulting in yet further lawsuits by the company against its insurance carrier.

Bankruptcy of waste generators, disposal sites, transporters and insurance companies is becoming a common occurrence. With each company that goes bankrupt, the monetary obligations of surviving companies increase.

Within the United States, the only solution to this problem is political and legislative. To other countries or international bodies which are considering regulatory recommendations or liability schemes, I offer this message as guidance on mistakes to avoid.

## Oleochemicals as a Fuel: Mechanical and Economic Feasibility

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### ABSTRACT

The status of vegetable oils as diesel fuel substitutes is currently dubious. Although it is fair to consider them as short-term emergency fuels (or, more desirably, low proportion supplements to diesel fuels), they present mechanical problems in long-term use that have not yet been solved. It is preferable to use these oils blended in small proportions with diesel fuels. Indirect-injection diesel engines have had fewer problems than direct-injection engines, whether the tests were performed with pure vegetable oil fuel or with vegetable oil/diesel fuel blends. The economic prospect for these fuels is not promising. In general, they are not and have not been economical alternatives to diesel fuel. Exceptions appear to have occurred recently in Brazil and the Philippines where low local prices for vegetable oils combined with high petroleum prices encouraged officials to use low proportion vegetable oil/diesel fuel blends. Nonetheless, current and long-term trends in petroleum and oilseed prices indicate that these fuels will probably not be price competitive within the near future. Emergency disruption of petroleum supplies completely changes the economic situation. Vegetable oils would be

worth much more as a fuel during disruptions than otherwise; thus incentives could be strong to include these oils in the fuel supply, diverting them from the food supply.

### INTRODUCTION

Oleochemical products have been used with mixed success as diesel engine fuels. Government researchers, diesel engine manufacturers and farmers have all performed tests that demonstrate the potential and the problems of this fuel source. There is a very real potential for using vegetable oils in some form as a diesel fuel. There are, however, very real problems that will restrict the introduction of this resource into the energy pool.

This discussion considers the mechanical feasibility of this fuel source, the economics of the situation and the supply of vegetable oils compared to the current demand for liquid fuels.