AAI

Antitrust Toolkit for State Intervention in the Medical Waste Disposal Industry

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Executive Summary

Developments in the medical waste disposal business over the past decade have led to an industry that suffers from considerable competitive distortion. In some cases, antitrust authorities have had to intervene to correct abuses of market power. As a fairly "low tech" industry reliant on trucks and local or regional treatment plants or transfer stations, market conditions can vary widely by geographic locale.

Antitrust authorities in disparate sections of the country, therefore, may face similar patterns of collusive or exclusionary conduct in the medical waste disposal industry. For each enforcement authority to "start from scratch" when investigating such competitive distortions is usually an unavoidable inefficiency. This *AAI Toolkit for State Intervention in the Medical Waste Disposal Industry* represents an attempt to counter this inefficiency, and to sensitize enforcement authorities to the kinds of competition problems that have arisen outside of their respective jurisdictions.

Funded by a grant from the State of Utah out of funds obtained in connection with the settlement of a case against medical waste firms in the inter-mountain region, the *Toolkit* is intended to familiarize enforcement authorities with the technology and structure of the industry and some of the legal theories and authorities that are likely to be relevant to an investigation in this sector. An appendix contains documents related to recent governmental and private actions.

I. Introduction: A toolkit for antitrust enforcers

Support for this project—a "toolkit" for state or federal antitrust investigations and prosecutions in the medical waste disposal industry—was provided for by the Attorney General Litigation Fund created by the Utah Antitrust Act, § 76-10-922, Utah Code Ann. (Supp. 2002). The project came about in 2003 after negotiated settlements were reached between the Utah Attorney General, Mark L. Shurtleff, and the industry's dominant medical waste disposal services provider, Stericycle, Inc. (hereinafter, "Stericycle") and its then largest competitor, BFI Waste Systems of North America, Inc. ("BFI").

The State of Utah sued Stericycle and BFI in the United States District Court for the District of Utah for entering into "illegal agreements to allocate customers, divide market territories, agree and conspire not to compete, and attempt to monopolize the markets for collection and disposal of medical waste" in the inter-mountain states of Utah, Colorado, and Arizona.

Consent decrees were entered against each company within days of the filing of the complaint. Both negotiated judgments sought to facilitate future competition in the industry, but with BFI having exited the medical waste disposal business in 1999 with no plans to re-enter, this was something of a challenge. Therefore, as part of the sanction against it, the Attorney General arranged for BFI to fund an independent autoclave facility and to donate $100,000.00 to the promotion of competition in the medical waste disposal industry.

In the process of investigating and prosecuting the case, the office of the Attorney General of Utah learned that potential antitrust problems lurked elsewhere in the country, not just in the inter-mountain region. Accordingly, a decision was made to use part of the settlement proceeds as a grant to the American Antitrust Institute ("AAI") to study and report on the competitive conditions in the U.S. medical waste disposal industry.

To perform the economic analysis, AAI engaged the Center for a Competitive Waste Industry of Madison, Wisconsin. The result of that collaboration is this "toolkit" for antitrust enforcement intervention in the medical waste disposal industry. Given the advantages of inter-jurisdictional cooperation on investigations with common parties and circumstances, this report is intended to provide practical guidance for antitrust authorities dealing with the medical waste industry.

The authors are indebted to Wayne Klein of the office of the Attorney General of Utah and Ellen Cooper the Office of the Attorney General of Maryland for comments on an earlier draft. Of course, the authors are solely responsible for all errors.

II. Medical waste: Generation, removal, and treatment

II.A. Generation of medical waste.

Towards the second half of the Nineteenth Century, industrializing societies began to discard major volumes of things that had previously been reused and also created whole new categories of solid waste. By the Twentieth Century, these discards had become a torrent. Amidst the growing mountains of garbage, several distinct types of waste slowly emerged, including construction and demolition debris, hazardous waste, household and commercial waste, industrial process waste, and medical waste, the subject of this report.

When disposed of, each of them, to varying degrees, caused significant health and environmental impacts. But, during the critical take-off phase of industrialization, most capital was reinvested back into further expansion, and, consequently, these waste disposal externalities remained largely unaddressed for almost a century. Between 1880 and 1980, minor remedial efforts were largely limited to moving the problem further away from direct exposure to people.

The modern environmental movement, which grew out of wilderness protection, emerged sometime between the publication of *Silent Spring* in 1963 and the first Earth Day in 1970. Early reforms focused on air and water pollution. Not until the 1980s did public heath and environmental regulations begin to seriously address solid waste. But these noble efforts also produced the significant potential for the innately fragmented and locally based waste industry to consolidate and acquire market power. And, because each type of waste tailored safe disposal procedures to its particular attributes, the regulatory structures wound up effectively creating discrete markets for each type of waste.

EXAMPLES OF MEDICAL WASTES

- Soiled or blood-soaked bandages
- Culture dishes and other glassware
- Discarded surgical gloves after surgery
- Discarded surgical instruments (e.g. scalpels)
- Needles used to give shots or draw blood
- Cultures, stocks, swabs used to innoculate cultures
- Removed body organs (e.g. tonsils, appendices, limbs)
- Lancets used to draw blood samples

The volume of medical waste in the U.S. as of 2001 is estimated to be 2,700,000 tons per year, which compares to the 103,050,000 tons of commercial waste and 125,950,000 tons of residential municipal solid waste annually.

In most geographic markets, the number of hospitals and large out-patient clinics that have more than incidental loads is not large. A metropolitan area of a half-million people might not have more than 100 major medical waste generator sites.

II.A.1. Types of medical waste.

Medical wastes are those discards from health care facilities that require special treatment to be neutralized in order to protect the public from disease. As defined by the Environmental Protection Agency ("EPA"), this includes any solid waste generated in the diagnosis, treatment, or immunization of people or animals, or in medical research, or in the production or testing of medicines.

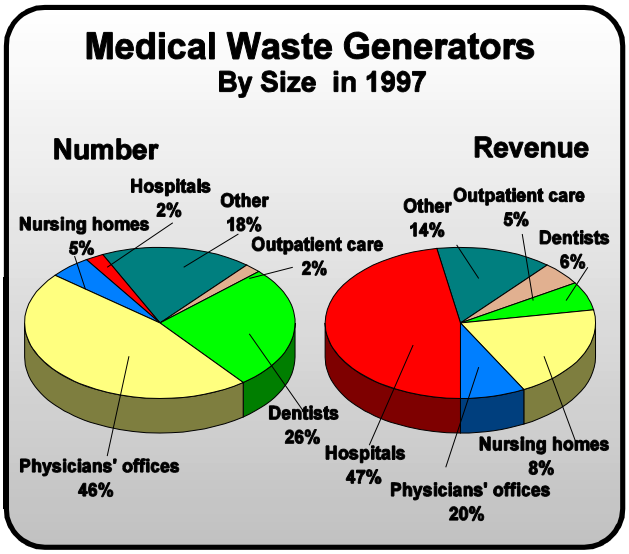

FIGURE 2

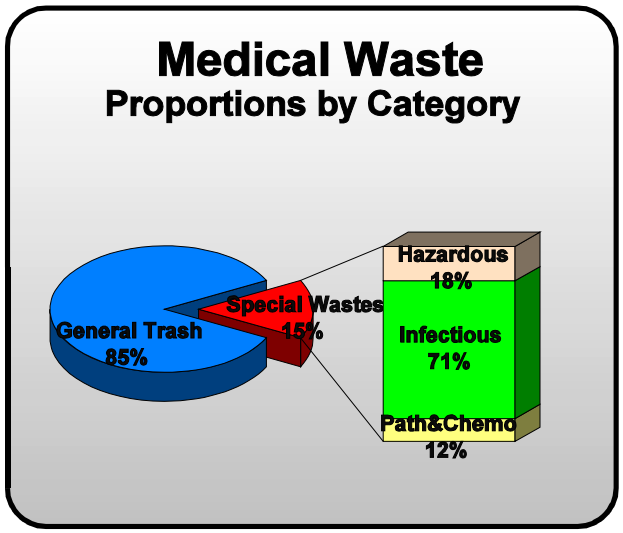

FIGURE 1

There are a number of different types of medical waste. Just like any other institutional facility, most of what medical facilities dispose of is commonly thought of as garbage (*e.g.,* food scraps, uncontaminated cardboard and office papers) that does not require specialized handling due to any inherently dangerous attribute. The pie chart in Figure 1 shows the dominant place of trash in the medical sector's waste stream. Eighty-five percent is essentially commercial trash, and about 15% is segregated for special handling.

Special waste is broken down further by subcategory, as shown in the columnar chart in Figure 1. The sector's special waste stream consists of infectious waste (*e.g*,. used syringes)(71%), pathological, chemotherapy, and pharmaceutical waste ("PCP") (*e.g*,. unrecognizable body parts and tissues and compounds used in cancer and other therapies) (12%), and hazardous waste (*e.g*., mercury) (18%). What this report refers to as "medical waste" includes both "infectious" and PCP waste. A fourth category of "waste" is made up of recognizable body parts, which are usually treated at a crematorium.

Hazardous waste is further subdivided to separate small amounts of low-level radioactive waste that are subject to the separate jurisdiction of the Nuclear Regulatory Commission ("NRC").

Caution should be taken in interpreting the figures. Even though 15% of the waste stream is segregated for special treatment, the level of care used to separate the two streams may have been insufficient. Some observers estimate that as much as 50% or more of the special waste consists of everyday trash, which suggests that the true amount of infectious waste is more in the order of 7% - 9% of the total discarded. The trend, however, is clearly in the direction of greater efficiency in sorting by medical waste generators. The pressure for cost containment has grown in the health care industry and the price for medical waste disposal has increased.

Thus, conditions have shifted to provide facilities with greater incentives to more carefully sort the medical waste stream.

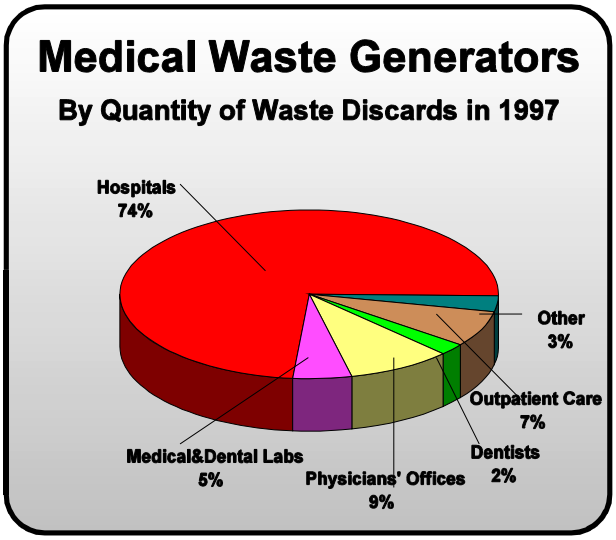

FIGURE 3

II.A.2. Medical waste generators.

Many different types of medical facilities either diagnose, test, prevent or treat a wide variety of diseases in people and animals. They include hospitals, blood banks and pharmaceutical manufacturers. These are the "large" customers, those with substantial volumes of discards at each site. Due to their size, they may have the option of treating some or all of their medical waste in-house.

Smaller clinics, long term care and out-patient care facilities, and doctor, dentist and veterinarian offices have been characterized as the alternate care market. Though once a minor part of the facilities providing medical services, the alternative care market is growing as health care becomes increasingly specialized. Unlike the large customer, the quantities generated by an alternative care facility can be relatively small, sometimes only requiring pick-up once every few weeks.

Figure 2 shows the facilities in 1997 which generated medical waste broken down by the number of each type of facility and by the revenue-weighted size of each. The distinction between large and small medical waste generators is often drawn at 200 pounds of infectious waste per month.

Medical facilities discarded approximately 2,700,000 tons in 1997, 24% from the alternate care market and 74% from the large facilities. A breakdown of the proportion of waste by quantity from among the different categories of medical waste generators is shown in Figure 3.

Typically, smaller facilities have not had the scale to purchase the equipment necessary to treat their own medical wastes in-house. Hospitals, on the other hand, either individually or jointly, have the potential to economically treat their medical wastes in- house.

II.B. The removal of medical waste

Removal services collect untreated medical waste in trucks from medical waste generators and transport it to a facility where it is off-loaded for transfer to long-haul semi-trucks and taken to a distant treatment plant, or off-loaded directly at the treatment plant, where the infectious pathogens are destroyed.

The business of removing regulated medical waste ("RMW") from facilities that generate it depends on a network of garaged collection vehicles that operate on fixed routes to pick up waste from the customers' sites. The vehicles are generally 50 cubic yard capacity with rear lifts fitted onto a medium duty truck that may altogether cost approximately $50,000 (as of 2004). Record keeping requirements pertain in some states because the waste are infectious, but that does not appear to pose a substantial burden. Typically, then, there are no structural barriers to entry into the removal business, that is, the simple collection and transportation of medical

waste, other than access to adequate treatment services. For some isolated facilities not near any regular collection route, even package express shippers have been known to transport medical waste.

The fact that a medical waste removal service hinges on a network of trucks dispatched from a central garage and some distance to an off-loading site might lead one to expect that the geographic market definition reflects corresponding geographic limitations. This has been seen in the solid waste industry, where the relevant economic and antitrust market definitions are "metropolitan" in character.

The geographic market for removal of medical waste, however, is not the same as for solid waste, which is, generally, the metropolitan level. While not in any sense a national market, removal of medical waste does not exhibit the same high density structure of solid waste which makes that market distinctly local. Garbage is usually set out in a single set-out receptacle or dumpster at the curb for ease of loading. Collection is done in a large compacting, often automated, vehicle that makes several stops a block, each stop lasting one-half a minute to a few minutes, and, with its large payloads, staying on the route for half a day or more.

Medical waste, however, is typically set aside inside in multiple boxes or carts, and often are not set outside for convenient collection. The collection vehicle is smaller and prohibited by regulations from having compacting capability. The stops are typically in different parts of town and do not exhibit much density, with stops often taking a half hour.

The result is that, in the absence of sufficient customer density in a local area, the geographic market for medical waste can be wider than it is for ordinary solid waste.

II.C. The technology for the treatment of medical waste.

Medical waste is usually hauled directly to nearby treatment facilities which have the capability to destroy infectious pathogens. However, if the closest treatment facility is not near the collection routes, a transfer facility is used to off-load the medical waste from the collection vehicle to a semi truck for long hauling, sometimes hundreds of miles, to a treatment facility. After treatment, the residual byproducts are usually disposed of in a conventional landfill.

Many approaches to treating infectious waste have been employed. Treatment facilities can employ only one of four basic processes: thermal, irradiation, chemical, and biological. Three methods are in general commercial application: incinerators, autoclaves and macrowave irradiation.

II.C.1. High-temperature thermal processes.

Thermal processes use heat to destroy pathogens, and are differentiated according to whether they are high-temperature or low-temperature technologies. High-temperature incineration usually takes at 1,500°F. Higher temperatures result in the near total destruction of the waste, but tend to exhibit toxicity in the form of toxic air emissions and ash byproducts. Incineration is currently in commercial use, while plasma arc technology remains nascent.

II.C.1.a. Incineration.

Historically, medical waste incinerators were designed to be all-purpose, relatively cheap, on-

site units for disposing of the entire waste stream from hospitals, and later were joined by larger incinerators operated by subsidiaries of WMI and BFI (now owned largely by Stericycle) to provide service to health care facilities that outsourced handling of their medical wastes.

Because incinerators take significant time to pre-heat in order to attain the necessary high temperatures, they need to be operated continuously for long periods to be profitable. The fact that high-capacity operation is needed to maximize efficiency and improve profits puts downward pressure on prices. This downward price pressure is magnified if the incinerator is operating at less than full capacity, the market has several providers, and supply exceeds demand for incineration. In the mid-1990s, the two waste disposal giants that also dominated the medical waste disposal industry, owned 59 large commercial medical waste incinerators. As a result of regulatory mandates and greater technological efficiency in less costly alternatives, many of those facilities are now closed.

Burning at high temperatures reduces the mass of the waste by 90%, leaving ash residue to be disposed of in a landfill. When hazardous wastes are burned the byproducts could include dioxins, furans, hydrochloric acid, mercury, lead and cadmium that are dangerous to people's health. The hazardous compounds also may make the ash too hazardous to be disposed of in less expensive municipal landfills, and instead will be required to be sent to more expensive hazardous waste disposal sites.

Since unregulated hospital incinerators were relatively inexpensive, few of the discards from medical facilities are thought to have been separated into discrete infectious, hazardous, or solid waste fractions before being disposed of in large incinerators.

The fact that the rules no longer permit commingling of hazardous and infectious waste has opened up a market for lower heat forms of treatment. Once hazardous waste has to be separated from the infectious wastes sent for treatment, then lower temperature technologies became adequate to the task.

Whatever the technical merits of incineration, EPA's air pollution emission regulations (effective in 2000, see Section III, *infra*) severely circumscribed its role in future medical waste markets. On-site "self-help" incinerators have been largely shut down.

The large commercial burn units are sunk investments that are often fully depreciated. Technically, they might be upgraded to meet the new rules and continue operating, but increasing political opposition in some states forced many hospital incinerators to shut down even though it would not have been uneconomic to comply with the EPA regulations.

Hospitals that previously burned internally have been largely shifted to the outsourced market for commercial medical waste service. The years between 1999 and 2002 saw a dramatic shift from on-site treatment of hospital medical waste to outsourced disposal. Certainly, one reason for this is the requirement in the EPA rules for pollution control devices that cannot be practically met by small on-site hospital incinerators.

II.C.1.b. Plasma arc pyrolysis.

Plasma arc systems are advanced forms of pyrolysis which produce temperatures ranging

from 3,000°F (1650°C) to as high as 21,000°F (11,600°C) with a plasma-arc torch to generate the plasma energy. Plasma pyrolysis is a relatively new technology that has very little track record. At these temperatures, the waste is destroyed, forming a product gas, referred to as syn gas. Energy can be recovered from the product gas by using it as supplemental fuel to produce steam or hot water in co-generation or simply burned in a flare. In the future, the product gases that are rich in hydrogen or methane could be used in conjunction with fuel cells to produce clean electricity.

Because of their extremely high temperatures, plasma-based technologies are, in principle, capable of destroying a wide range of infectious, PCP, and some hazardous wastes (not including, for example, mercury). From a technical standpoint, plasma systems can treat the same types of waste as an incinerator, but with substantially fewer emissions of concern.

II.C.2. Low-temperature thermal processes.

Low-temperature thermal processes include autoclaves, which use steam and operate below 750°F, or micro- or macro-wave irradiation.

II.C.2.a. Autoclaves and rotoclaves.

An autoclave uses steam sterilization to disinfect medical waste. Waste, often ground up, is loaded into a chamber and the temperature and pressure are raised for a certain period of time in order to kill pathogens in the waste. Some autoclave units create a vacuum, passing the exhaust air through a high-efficiency filter, before introducing steam. By using a vacuum, heat is transferred more efficiently to the waste.

Because autoclaves involve the use of steam, there is potential for generating extensive contaminated liquid effluent that may be released to sewers or local waterways if the care facilities did not fully segregate its hazardous wastes. When regulatory enforcement or proper housekeeping is used, this potential problem should be substantially reduced.

A promising extension of autoclaving is rotoclaving. A rotoclave is a class of autoclaves with additional mechanical processes, such as shredders, mixing arms, or compactors, to make the waste unrecognizable, reduce volumes, and enhance the efficiency of the treatment. By adding the capability for shredding along with sterilizing, the residue which is landfilled is both free of pathogens as well as being no longer recognizable in the sterilized residual.

Less expensive autoclaves are feasible now that hazardous waste must be separated. According to the EPA, the cost of processing a ton of medical waste in a regulated incinerator with pollution control devices is approximately $700, nearly twice as expensive as autoclaves. New investment in regulated incinerators cannot compete with autoclaving when the latter is viable under the applicable regulations. Not only is less of an investment required to establish an autoclave, but a non-incinerator treatment facility can be more quickly site-permitted.

II.C.2.b. Irradiation.

Irradiation involves ionizing radiation to destroy microorganisms. Microwaves (high-frequency irradiation) and macrowave (low-

frequency irradiation) use an oscillating energy field of radio waves to heat medical waste to temperatures that destroy pathogens.

Some of Stericycle's treatment plants use a treatment process it calls electro-thermal deactivation ("ETD"). The company claims that ETD is preferable to autoclaves and microwaves because low-frequency radio waves can penetrate deeper than high-frequency waves and there are fewer regulated emissions. If these claims are true, the burden of siting, controlling emissions, and other costs to establish new treatment capacity should be less than that for new entrants.

When fashioning a remedy against a violation by a medical waste defendant, therefore, consideration should be given to imposing an affirmative duty on the part of the company to establish additional ETD treatment capacity, as discussed in Section IX, *infra*.

II.C.3. Biological and chemical treatments.

Chemical processes use disinfectants to destroy pathogens or chemicals to react with the waste. Biological processes use enzymes to decompose blood, other liquid medical wastes, spoors, and other organic matter.

Chemical precesses are not in commercial use and seem to hold out only limited promise as a supply of future treatment capacity. Biological treatment, on the other hand, while not yet generally accepted as safe, has a much greater potential for commercialization. New, small-scale biological treatment systems are capable of treating significant types of blood and liquid infectious waste in-house at substantially lower costs.

Biological treatment, however, has been controversial. A years-long effort to have biological treatment of medical waste standardized by Underwriters Laboratory ("UL") ended in defeat in 2004 in part due to opposition from the Medical Waste Institute, the trade association for commercial medical waste service providers.

Petitioning governmental bodies is generally immunized from antitrust scrutiny under the *Noerr-Pennington* doctrine (see *Eastern Railroad Presidents Conference v. Noerr Motor Freight Inc.*, 365 U.S. 127 (1961) and *United Mine Workers v. Pennington*, 381 U.S. 657 (1965)). Nonetheless, efforts to affect the outcome of private, standard setting organizations may be subject to antitrust liability in certain circumstances, see *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492 (1988).

III. The regulatory environment

Historically, hospitals incinerated their medical waste in-house. The remaining ash residues were disposed of as part of the general solid waste that was largely serviced by third-party trash companies. Environmental regulations have now made it uneconomical to treat medical waste in-house.

For decades, medical waste was burned on-site in hospital incinerators without pollution control equipment. Special handling was not generally used. The modern regime of regulated medical waste did not begin until the public, reacting to several jarring health events, demanded that discarded body parts, syringes, blood soaked bandages and other infectious wastes be segregated and accorded extra care.

III.A. The Medical Waste Tracking Act of 1988.

In the summers of 1987 and 1988, while public attention was riveted on the Mobro garbage barge as it embarked on its epic, Flying Dutchman-like journey in a fitful attempt to dispose of a load of Long Island trash, television news was filled with graphic pictures of syringes and other bagged medical waste washing up on New Jersey beaches.

The images quickly became the target for late night comedians, and, soon thereafter, public revulsion led Congress to pass the Medical Waste Tracking Act of 1988. The new law established a two-year demonstration program, in which New York, New Jersey, Connecticut and Rhode Island participated, requiring medical waste to be tracked from its point of origin to its ultimate disposal.

The regulations promulgated under the Medical Waste Tracking Act expired on June 21, 1999. The actual standards for tracking medical waste were in effect from June 1989 to June 1991 in New York, New Jersey, Connecticut, Rhode Island, Puerto Rico. Some states have continued the tracking requirements.

III.B. The Clean Air Act Amendments of 1990.

Before about 1990, health care workers were understandably more focused on life and death decisions for their patients than they were on segregation of trash, infectious waste and hazardous wastes. Hospital incinerators were presumably fed hazardous wastes along with almost everything else, which explains one of the reasons that EPA identified Medical Waste Incinerators ("MWIs") as the largest known source of mercury emissions, emitting more than municipal waste combustors and coal-fired electric utility boilers.

Since then, EPA regulations have been adopted that require hazardous waste—chemicals that exhibit ignitability, corrosiveness, reactivity, and/or toxicity—to be incinerated separately from infectious medical

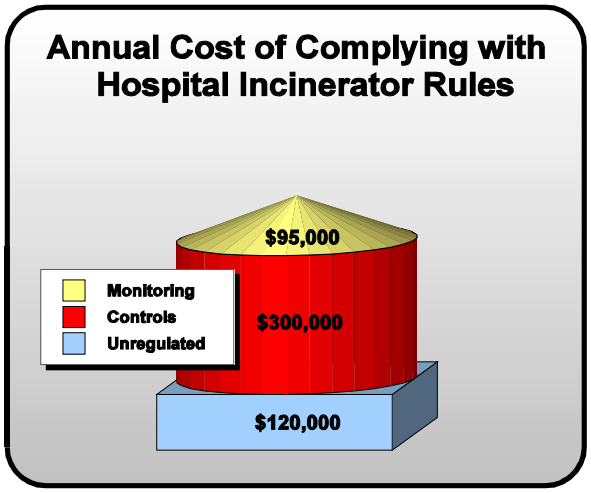

FIGURE 4

waste.

The Clean Air Act Amendments of 1990 ("CAAA") were enacted in response to numerous concerns about the state of the nation's air, including organized protests against serious uncontrolled emissions of dioxins, mercury and other harmful compounds from hospital incinerators.[1] The EPA was directed to adopt rules that would require hospitals to install costly new pollution control technologies on their incinerators, although such regulations were not adopted until 1997, and did not take effect until 2002.

In 1995, when more than 2,000 hospitals still incinerated their own medical waste on site, EPA proposed new source air pollution rules for medical waste incinerators under the CAAA – rules which added major costs that wound up closing most of the incinerators. In an earlier study from 1994 the EPA had found that the 30% of hospitals with an estimated 2,400 medical waste incinerators were "the largest known source of dioxin emissions, emitting more than municipal waste combustors, hazardous waste incinerators, and cement kilns." The EPA stated:

> In addition to dioxin, M[edical] W[aste] I[ncinerators] also emit significant quantities of heavy metals including lead, cadmium, and mercury. ... MWIs have been identified as the largest known source of mercury emissions, emitting more than municipal waste combustors and coalfired electric utility boilers. The MWIs also emit nitrogen oxides (a contributor to ozone smog), particulate matter, sulfur dioxide, and other acid gases.[2]

The regulations finally adopted by the EPA in 1997 established stringent pollution control device requirements on medical incinerators that made on-site burning uneconomical for many waste generators. EPA's final medical waste incinerator rule in 1997 required the maximum achievable control technologies (MACT) to reduce emissions from medical waste incinerators of particulate matter, sulfur dioxide, hydrogen chloride, nitrogen oxides, carbon monoxide, lead, cadmium, mercury and dioxins of between 80% and 96%. As shown in Figure 4, the costs to operate a large hospital incinerator that previously cost $120,000 a year to run, could, EPA estimated, increase by $300,000 to operate the newly required air pollution control devices and another $95,000/yr. to monitor for compliance – all together, a 429% increase. The costs for smaller incinerators was unaffordable due to a lack of scale.

[1] 42 U.S.C. §7401 *et seq.*, and 40 C.F.R. PART 60 SUBPART A.

[2] 60 Fed. Reg. 10656 (February 27, 1995).

The new rules not only created a need to upgrade pollution control devices on medical incinerators, but also to better restrict the types of wastes that they received. Since the rules of the Occupational Safety and Health Administration ("OSHA") require spent supplies contaminated with blood to be labeled as "red bag" waste and disposed of separately from regular trash, the EPA rules meant that hazardous constituents of the medical waste stream had to be diverted from the red bags and sent to licensed hazardous waste landfills.

Thus, the 1997 rules revealed another inefficiency in how medical waste was handled at most hospitals. Dangerous discards from medical facilities included hazardous waste, such as mercury, that is not destroyed, as are pathogens, by burning. Generating facilities were forced to go to the time and expense of improving their housekeeping practices to separate hazardous waste from medical infectious wastes, which leads to a potential efficiency gain in the process of medical waste disposal with implications for the medical waste industry.

At the time that EPA promulgated its rules, there were about 2,300 hospital incinerators of various sizes and the two waste disposal giants, WMI and BFI, owned 59 large commercial medical waste incinerators. Analysts at the time estimated that the new rules would generate approximately $150 million in new outsourced business for the medical waste industry, under the expectation that 80% of on-site incinerators would close down. That would have been a 15% boost to the revenues of the, then, $1 billion a year industry.

A subsequent analysis of the effect of the 1997 rule on in-house hospital incinerators by Lehman Brothers found that of the 2,316 hospital and medical waste incinerators EPA verified in 1995 when it first proposed the medical waste rule, 463 were originally anticipated to stay open, 195 actually remained when the rule took effect in 2002, and only 108 were expected to continue operating by the following year. That represented a substantially greater than 95% decline in on-site capacity to treat hospitals' medical wastes than the original 80% projection. See Figure 5.

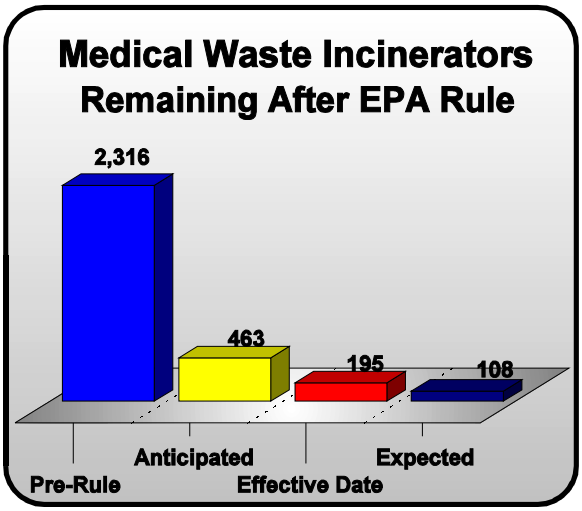

FIGURE 5

Although hospitals continue to have the capability to internalize treatment of most of their medical wastes, the stricter medical waste incinerator regulations EPA promulgated in 1997 had the practical effect of convincing most of the 2,000 hospitals to close their incinerators; many of them out-sourced the task of removing and treating their infectious waste.

III.C. OSHA standards.

AIDS had been recognized since 1981, but for

years its elusive epidemiology and resistence to a cure made health care workers extremely nervous. A poll in 1986 in Nursing Life, followed by dozens of others, revealed as many as half would refuse to minister to the afflicted.

In response to the growing concern over the spread of HIV infection, OSHA adopted its Bloodborn Pathogen Standard to protect health workers and calm their fears. Along with requirements for protective clothing, the rules also require the segregation of spent supplies contaminated with blood into red bag waste for separate disposal.[3]

The succession of EPA and OSHA requirements substantially increased the costs for hospitals with their own incinerators to comply with the new rules, forcing most hospitals to outsource the treatment of their medical waste. The price of medical waste disposal services offered by the large solid waste disposal firms was constrained to some extent by a competitive fringe that offered low cost collection and autoclave treatment. However, neither these autoclave systems nor the large incinerators could treat the hazardous waste generated by medical facilities, so hospitals were forced to segregate their hazardous wastes for alternative treatment.

This segregation reduces the primary remaining objective of medical waste treatment to neutralization of pathogens, for which expensive, high-heat incinerators are not necessary. The complete destruction of pathogens in a variegated stream of medical waste from which hazardous materials have been removed is a less demanding function that can be accomplished with substantially less expensive low-heat processes using steam, microwaves or radio waves, without expensive pollution control equipment.

Autoclaves, the most common technique, do exhibit significant scale efficiencies (at least the total capital requirements are less, as are the public health concerns when operated properly). The waiting time for securing siting approval is also shorter.

III.D. State regulations.

Many states require that recognizable body parts be either interred or cremated. Some states further require that unrecognizable human tissue and PCP waste be either burned in an incinerator or, alternatively, destroyed in another approved high temperature process.

According to one study, 27 states have some regulation that requires specialized, high temperature treatment of PCP waste.[4] These state-level treatment requirements may be based on considerations of the social norm rather than on economic efficiency, and can have a significant impact on competition. In particular, such regulations may be an important element in evaluating the barriers to entry in a given market for medical waste services. There are a limited

[3]29 C.F.R. §1910.1030.

[4]The survey was reported by Health Care Without Harm, in *Non-Incineration Medical Waste Treatment Technologies: A Resource for Hospital Administrators, Facility Managers, Health Care Professionals, Environmental Advocates, and Community Members* (August 2001), Appendix at p. 99 (State Regulations for Pathological Waste), which was conducted by Jessica Nelson of the Institute for Agriculture & Trade Policy.

number of medical waste incinerators, and siting a new facility can be difficult, time consuming, and all but impossible in most parts of the country. Most of the medical waste incinerators that remain after EPA imposed strict controls on emissions in 1996 are under the control of the dominant national medical waste disposal provider, Stericycle.

We reproduce that survey below in Table 1, with the caveat that the details for any particular state should be verified by reviewing the applicable regulations. These regulations are ripe for modernization to account for advances in treatment technologies. Until then, however, they are likely to play some role in the competitive analysis in the related jurisdictions.

Table 1: States with Regulations That Require Incineration of Certain Medical Waste		
1. Alabama	Recognizable human tissue	Ala. Reg. 335-13-7.08(2)(b)(2)
2. Arizona	Recognizable human tissue	Az. Admin Cd R18-13-1405 D.1, E.2
3. Arkansas	PCP	
4. California	Recognizable human tissue, PCP	Ca. Hlth Sfty Cd., Sec. 118220
5. Colorado	Recognizable human tissue	Colo. Sld. Wste. Reg., 1004-2, Sec. 13.4.4
6. Connecticut	PCP	Ct. Gen Stat., 22a-209(c)(b)(2)
7. Delaware	PCP	Del., Sld Wst Reg. Sec. 11, Pt 1,K,2
8. Georgia	Recognizable human tissue	Ga. Env. R, 391-3-4-.15.6(c)
9. Hawaii	Recognizable human tissue, PCP	Haw., Admn R. 11-104-5(c)4, -9(d)
10. Kentucky	PCP	902 Ky. A Reg 20:016 3(10)(h)(3)(b)
11. Louisiana	Recognizable human tissue	La. San Cd., 27:025-7
12. Maine	PCP	Me. R., 06-096, Ch 900, Sec. 10A
13. Massachusetts	PCP (solid), Certain human tissue	105 C.Ma.R. 480.200E
14. Michigan	PCP	Mi. Med Wa. Rg. Act, Sec. 13811(C)
15. Montana	Recognizable human tissue	Mon C. Ann., 75-10-1005(4)(c)
16. New Hampshire	Recognizable human tissue	N.H. C.Ad. R. Env-Wm 2604.08
17. New Mexico	Recognizable human tissue	20 NM Ad C 9.1-706(D)(5)
18. New York	Recognizable human tissue	NY Cd, R&R, Tit. 6 360-10.5(b)
19. North Carolina	PCP	NC R. 1203 (a)(3)
20. Ohio	PCP	O Ad Cd., 3745-27-32(D)(1)(f)
21. Oregon	PCP	Or. Rev Stat. 459.395(1)
22. Pennsylvania	Human anatomical remains	Pa Cd., 273.511(C)(2)
23. Rhode Island	PCP (except bodily fluids)	R.I. Reg., 15.07(C)(2)
24. South Carolina	Recognizable human tissue	S.C. Reg. R.61.105.T(5)(b)
25. Texas	Human tissue and remains	Tx. Ad. Cod. R. 1.136(4)
26. West Virginia	Recognizable human tissue	W.Va. 64 CSR 56
27. Wisconsin	Recognizable human tissue	Wis Ad Cd, 526.11(2)(a)

IV. The medical waste disposal industry

IV.A. Background.

The cascade of medical waste regulations imposed on the health-care industry occurred at the same time the delivery of health care services was becoming increasingly stratified through outpatient clinics and smaller facilities that do not have the resources to treat their own medical waste internally. Both the new regulatory burdens and the stratification in health care delivery constituted a sea-change in the medical industry toward outsourcing the removal and treatment of medical waste to third-party service providers.

Growth in demand for medical waste disposal services was especially pronounced among small generators which do not have the scale to install autoclaves in-house, and are faced with no alternative but to use third-parties to take their infectious wastes to approved treatment facilities.

Reacting to these changes, beginning in 1988 and increasingly through the 1990s, many garbage collection companies moved aggressively to extend the scope of their operations to enter the medical waste market. They were emboldened by the belief that there would be economic and marketing efficiencies captured by bundling both services to large customers. Moreover, the closure of a majority of on-site hospital incinerators left in operation primarily large off-site units operated by companies that could afford to retrofit their units with capital improvements mandated by the regulations, such as secondary chambers, high efficiency wet scrubbers with activated carbon, and the training and qualifying of staff to run and monitor updated facilities. Originally, those units were owned by Browning Ferris Industries ("BFI") and Waste Management, Inc. ("WMI"), the two dominant firms in municipal solid waste disposal.

IV.B. Industry consolidation.

At the beginning of the 1990s the medical waste market appeared to be highly competitive, even in the face of an increasing regulatory environment. By the end of the decade, however, the market wound up becoming extremely consolidated, with only one company left with a "national" reach.

Had the solid waste consolidators not exited, the market for medical waste would have remained far more competitive because their presence would have perpetuated the continued operation of high fixed cost treatment facilities, and thus continued overcapacity. However, investors in the national garbage companies were too impatient to accept the depressed profit margins being realized by the trash firms remained in the medical waste disposal market.

In 1996 WMI sold its medical business to Stericycle for $10.7 million, increasing Stericycle's capacity by 35%. Four months earlier, Stericycle had gone public, raising $27.7 million from Wall Street, and it only spent down $5.5 million of the cash it had just raised for the acquisition.

This was a telling indication of the sheer intensity and peremptory nature of the problems the solid waste companies were experiencing. Barely one year after EPA first proposed tough hospital incinerator rules in 1996 that raised waste industry hopes of increased demand and higher prices, the once dominant trash firms exited the industry.

Following WMI's lead, most of the garbage companies exited the medical waste market in 1997, the very same year EPA promulgated the final air rules. Regional Carting, Superior Services, and Rumpke Container Service sold their medical waste lines to Stericycle, as well. To do so at a time when new regulations made mid-term prospects five years in the future so bright, seemed incongruous. Three explanations have been offered.

First, waste disposal firms appear to have reached the conclusion that the synergies between the trash and medical waste removal businesses had not materialized. Contrary to their anticipation, hospitals had not been disinclined to contract with different providers for different services in order to secure the best price. Stericycle's CEO Mark Miller boasted that "I think that what the solid waste companies have realized is, bundling [their trash and medical waste services to hospitals] doesn't work that way."

Second, were they to remain in the market, the supply of medical waste services would continue to exceed demand, leading to low margins for years in the future. After too many quarters of disappointing returns, private equity pools acted to throw out the management teams of first WMI in 1998 and then BFI in 1999 by financially backing the management of much smaller and narrowly focused USA Waste and Allied Waste to acquire the giants.

Third, medical waste was just too small a part of the business of general waste companies to invest for the long haul. Even BFI, the trash hauler most committed to expanding its scope into medical waste, only received 3% of its revenues from that line of business.

Alone, only BFI hung on for awhile, anticipating higher prices when EPA's medical waste incinerator rule became effective in 2002. But, its long-term strategic planning came for naught before that date when Allied Waste acquired BFI in 1999. Lenders had only bankrolled the smaller Allied's takeover of the far larger BFI based on its commitment to shed non-core and underperforming assets as soon as possible both to produce the highest returns but mostly to raise cash so that it could pay down the enormous debt it had taken on in order to complete the acquisition of such a larger company. Consequently, Allied sold BFI's medical waste assets to Stericycle concurrent with its buy out of BFI, in the process tripling the size of Stericycle and eliminating the only other national competitor.

V. Definition of the relevant markets

A competition analysis begins with a tentative definition of the relevant product and geographic markets. As a legal matter, an identified market is the first step in alleging collusive, anticompetitive or exclusionary conduct and the nature of its effect on competition. Pleading and proving a relevant antitrust market is usually considered elemental to a *prima facie* case, although its importance will vary depending on the nature of the available evidence and other factors. As a practical matter, all Clayton Act §7 unlawful merger cases are judged with reference to a defined market and the volume or revenue shares of the market participants. This is likely also to be the case in most Sherman Act cases in the medical waste industry.

The DOJ-FTC *Merger Guidelines*[5] approach market definition from the perspective of demand substitution factors, *i.e.*, possible consumer responses. Starting with the smallest possible group of competing products, the analysis asks whether a hypothetical monopolist could profitably impose a small but significant and non-transitory increase in price ("SSNIP").[6] The case law has come to regard 5% as a "small but significant" price increase. See *U.S. v. Sungard Data Sys., Inc*., 172 F.Supp.2d 172, 182 (D. DC, 2001).

By contrast, the *NAAG Merger Guidelines* define the relevant product market by determining the customers who purchase the products of the merging firms and expanding the market "to include suitable substitutes for the product which are comparably priced."[7]

V.A. The market for removal services.

V.A.1. The product market.

V.A.2. The geographic market.

V.B. The market for treatment services.

V.B.1. The product market.

V.B.2. The geographic market.

V.C. Additional considerations in market definition.

The role of market definition in an antitrust proceeding will depend on the nature of the offense and the type of available proof. For instance, in a monopolization case in which direct evidence of market power is unavailable, the plaintiff will have to rely on circumstantial evidence of market power and potential anticompetitive effect. The same is usually true of the analysis of proposed mergers. This

[5]*Horizontal Merger Guidelines*, U.S. Department of Justice and the Federal Trade Commission, (April 2, 1992, as revised April 8, 1997) (hereinafter, "*Merger Guidelines*").

[6]*Id.*, at §1.11

[7]*Horizontal Merger Guidelines of the National Association of Attorneys General* §3.1 (March 10, 1987, as revised March 30, 1993) (hereinafter "*NAAG Merger Guidelines*").

ordinarily entails pleading and proving a relevant antitrust market and the market shares of the alleged violator and its competitors. In such cases, market definition is not only required to frame the analysis and the allegations, (and therefore elemental to a *prima facie* case), but the antitrust market accepted by the finder of fact may ultimately prove to be dispositive.

On the issues of whether a firm has market power, whether its conduct caused harm to competition, or is engaged in a combination or merger that substantially lessens competition, the complainant will usually bear the burden of defining one (or more) relevant product and geographic markets.

In other cases the market definition may be less controlling. These include offenses that are charged as *per se* offenses—(*i.e.*, price fixing, some group boycotts, and market or customer allocations, all violations of §1 of the Sherman Act)—as well as offenses in which direct evidence of market power and exclusionary effect is available (most commonly arising in the context of §2).

"Less controlling" does not mean irrelevant, however. Not all cases falling under the *per se* category get *per se* treatment.

Similarly, not all rule of reason cases should require market definitions and the calculation of market shares. In *Indiana Dentists*, the Supreme Court stated that "the purpose of the inquiries into market definition and market power is to determine whether an arrangement has the potential for genuine adverse effects on competition."[8] The inquiry into market power is "but a 'surrogate for detrimental effects.'"[9] The upshot of *Indiana Dentists* is that proof of actual anticompetitive effect—such as a reduction of output or an increase in prices—can obviate the need for an inquiry into market power. "The absence of proof of market power des not justify a naked restriction on price or output" which, once demonstrated, must be justified "even in the absence of a detailed market analysis."[10]

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[8] *FTC v. Indiana Federation of Dentists*, 476 U.S. 447, 460 (1986).

[9] *Id.*, quoting P. Areeda, Antitrust Law, ¶1511, P. 429 (1986).

[10] *Id.*, quoting *National Collegiate Athletic Assn. v. Board of Regents of Univ. of Okla.*, 468 U.S. 85 (1984)(quoting P. Areeda,*supra*, that "the rule of reason can sometimes be applied in the twinkling of an eye.")

VI. Integrated removal and treatment service firms

VII. Anticompetitive features of the markets for medical waste disposal

VII.A. Barriers to entry.

Both relevant product markets—removal and treatment services—may be protected by one or more barriers to entry. Over the years, the precise economic meaning of a barrier to entry has evolved.[11] McAfee, Mialon and Williams distinguish between an economic and an antitrust barrier to entry. They put forward the following definitions:

a. An *economic barrier to entry* is a cost that must be incurred by a new entrant and that incumbents do not or have not had to incur;

b. An *antitrust barrier to entry* is a cost that delays entry and thereby reduces social welfare relative to immediate but equally costly entry.

These definitions focus on the cost differentials that keep competitive challengers at a distance. The second definition suggests that the timing of entry plays key role in the application of the concept to antitrust analysis.

VII.B. Barriers to entry into the removal market.

VII.B.1. Constraints on the availability of treatment services.

VII.B.2. Exclusive dealing.

VII.B.2.a. "Evergreen"provisions

VII.B.2.b. Exclusivity conditions.

VII.C. Barriers to entry into the treatment market.

VII.D. Market power.

Market power and monopoly power are often used interchangeably. Monopoly power is the power to control prices or exclude competition in a relevant market.[12]

VII.D.1. Market power in the removal services market.

Sherman Act §2 monopolization law requires possession of market power (or a dangerous probability of attaining it) in an identified market. Monopoly power in the adjacent upstream market may explain claimed exclusionary conduct meant to affect the downstream market. But, if the monopolization claim is directed at a lack of competition for retail business, a demonstration of market power—or the dangerous probability of

[11]See R. Preston McAfee, Hugo M. Mialon & Michael A. Williams, 2004, "What Is a Barrier to Entry?" 94 *Amer. Econ. Rev.* (*Pap & Proc.*) 461, 463 (discussing seven definitions of a barrier to entry, illustrating the "rich and confused heritage in economics" of the concept.)

[12]*United States v. E.I du Pont de Nemours & Co.*, 351 U.S. 377, 389 (1956).

achieving it—in the removal market will be required.

VII.D.2. Market power in the treatment services market.

VII.D.2.a. Stericycle's western states acquisitions.

Just after acquiring the disposal business of Arizona-based Envirotech in late 1997, Stericycle entered into a set of asset sale and swap agreements with BFI.

Two years later, Stericycle acquired BFI's medical waste business, including incinerators in North Salt Lake, Utah, and Phoenix and customers in California.

In late 2001, Stericycle acquired Integrated Environmental Systems ("IES") which operated an incinerator in Oakland, California, the last operating incinerator in the state.

In January, 2003, Utah successfully challenged the 1997 asset swap agreements as an unlawful market allocation scheme and a *per se* violation of §1 of the Sherman Act. When an asset swap transaction lacks an efficiency justification, it may be nothing more than a subterfuge to disguise a market allocation. The Consent Decree included an injunction against the North Salt Lake incinerator requiring Stericycle to provide access to it to third-party haulers. Follow-on private class-action customer antitrust litigation is the multidistrict litigation, *In re: Medical Waste Services Antitrust Litigation*, pending in federal court in Utah. Suit was also brought by an independent haulers in *Johnson v. Stericycle*. (Table 3, rows 2 and 3, respectively).

When Stericycle attempted to close the Chandler, Arizona facility in March, 2003, the Arizona Attorney General obtained an injunction requiring Stericycle to continue operations on an open access basis (Table 3, row 4). A follow-on private suit was brought in *NAFTA Environmental v. Stericycle and BFI* (Table 3, row 5).

By March, 2003, Stericycle had closed its Oakland, California incinerator, requiring medical waste to be hauled to North Salt Lake. California medical facility waste generators brought a class-action against Stericycle, *Stoll v. Stericycle, Inc.* (Table 3, row 6).

VII.D.2.b. Stericycle's Northeast Acquisitions.

In October, 2002, Stericycle acquired Bridgeview, Inc., operator of an incinerator located in Morgantown, Pennsylvania. Stericycle also entered into a plan of merger with Scherer Healthcare, Inc., whose subsidiaries included Bio Waste Systems, Inc. and Medical Waste Systems, Inc. The former operated a transfer station at Haverhill, Massachusetts. The Connecticut Attorney General expressed concern that the simultaneous acquisition of these two northeast tipping stations for medical waste was likely substantially to lessen competition for the sale of medical waste "hauling, transfer and processing services in New England." Stericycle entered into an "Assurance of Discontinuance and Voluntary Compliance," in which it undertook to divest the Haverhill transfer station, honor existing contracts for treatment at the Morgantown plant, and unwind an equity

investment made by Bridgeview in Medical Waste Management, Inc. of New England and its affiliate, Environmental Management, Inc.

VIII. Building an antitrust claim

Anticompetitive conduct often violates a number of prohibitions at once. Thus, when Stericycle and BFI allocated Arizona to Stericycle and Colorado and Utah to BFI, for example, the same conduct that supported a *per se* §1 Sherman Act claim for allocating markets also supported a monopolization claim under §2, and, given the concerted nature of the conduct, also a conspiracy to monopolize.

VIII.A. Substantial lessening of competition through unlawful merger, Clayton Act §7

The acquisition of stock or assets by a dominant firm is unlawful under §7 of the Clayton Act [15 U.S.C. §18] if "the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly."

The presence of the verb "may" in the statute indicates that the legal finding in a §7 case is based on a forecast. Modern forecasting implements a probabilistic model; in antitrust analysis, the evidence bearing on the likelihood of competitive harm in the post-merger period is usually a matter to be weighed by the trier of fact. Plaintiffs must prove a §7 violation by a preponderance of the evidence.[13]

VIII.A.1. Market definition, share, and concentration.

The analysis begins with a definition of the relevant product and geographic markets, determination of the market shares of the firms active in the market, and whether there is a level of concentration sufficient to trigger the presumption of competitive harm set forth in *U.S. v. Philadelphia Nat. Bank*, 374 U.S. 321 (1963).

Under *Philadelphia Nat. Bank* a post-merger market share of 30% or higher gives rise to a presumption of illegality in the sense that it suffices to prove a *prima facie* case. Defendants may rebut such a presumption by showing that the market-share analysis does not accurately reflect the probable effects on competition or that efficiencies resulting from the merger may be relevant.

The *Merger Guidelines* specify safe harbors based on the Herfindahl-Hirschman Index ("HHI") as an aid to identifying when a proposed transaction will not raise antitrust concerns because it takes place in a unconcentrated market.[14] The HHI is calculated by summing the squares of the individual market shares of all the market participants.

The *Merger Guidelines* divide the HHI scale into three regions: markets with HHI below 1,000 are characterized as unconcentrated; markets with HHI between 1,000 and 1,800 are

[13]See *U.S. v. Oracle Corp.*, 331 F.Supp.2d 1098, 1109 (N.D.Cal., 2004) ("To establish a section 7 violation, plaintiffs must show that a pending acquisition is reasonably likely to cause anticompetitive effects." [citing cases])

[14]*Merger Guidelines*, §1.5.

moderately concentrated; and, markets with HHI above 1,800 are highly concentrated.

The "delta-HHI" is the change in the HHI occasioned by the merger. Where the post-merger market is unconcentrated, the Agencies consider anticompetitive effects to be unlikely. Where the post-merger market is moderately concentrated, a delta-HHI of less than 100 is considered not to have adverse competitive effects; if the delta-HHI is greater than 100, the merger will raise significant competitive concerns. Finally, where the post-merger market ends up being highly concentrated, a delta-HHI of 100 or more will create a presumption that the merger is "likely to create or enhance market power or facilitate its exercise;" a delta-HHI between 50 and 100 raises significant competitive concerns.[15]

As a practical matter, market definition and industry concentration are central to a merger case and may often be dispositive. Courts that are critical of the structural approach in *Philadelphia Nat. Bank* and the *Merger Guidelines* must nonetheless follow the structural approach of contemporary merger law. In *U.S. v. Oracle,* a challenge by the Antitrust Division and several states to the Orcale-PeopleSoft merger, a court critical of the structural approach in the *Merger Guidelines* rejected the plaintiffs' market definitions, leaving the court with little or no market share or industry concentration evidence. In ruling against the government and several states, the court noted that the plaintiffs

> carry the burden of proving market shares and concentration in order to invoke the presumptions of the case law or to sustain a showing in accordance with the Guidelines. The court cannot furnish its own statistics. Without the benefit of presumptions, the burden remains upon plaintiffs to come forward with evidence of actual anticompetitive effects.[16]

VIII.A.2. Anticompetitive effects.

With respect to the likelihood of anticompetitive effects, both the accretion of market power and the facilitation of collusion can arise in the medical waste industry.

VIII.A.2.a. Unilateral effects.

Where merging partners will "merge to monopoly" in a well-defined market, the likelihood of unilateral effects in the form of price increases is obvious. Most cases are not as clear cut. One likely scenario is that the post-merger market will consist of a dominant firm with a competitive fringe.

The key ingredient for any successful merger challenge based on unilateral effects is the ability to identify a particular group or class of customers who are likely to be harmed as a consequence of the accretion of market power resulting from the merger. This even applies in markets involving highly differentiated or specialized products.

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[15] *Merger Guidelines*, §1.51.

[16] 331 F.Supp.2d at 1165.

VIII.A.2.b. Coordinated effects.

The post-merger market may be so concentrated that coordinated interaction would be facilitated by the merger. The *Merger Guidelines* define "coordinated interaction" as "actions by a group of firms that are profitable for each of them only as a result of the accommodating reactions of the others."[17]

A merger violates §7 when it threatens to diminish competition by enabling the firms in the market "more likely, more successfully, or more completely to engage in coordinated interaction that harms consumers."[18]

VIII.A.3. Entry conditions.

Under the *Merger Guidelines*, "if entry would be timely, likely, and sufficient in its magnitude, character and scope to deter or counteract the competitive effects of concern," the merger will not violate §7.[19]

Entry conditions in the removal service market (see Section VII, *supra*) hinge largely on the availability of treatment services for off-loading collected RMW. Potential competition in the removal service market can be a constraining force only if there is adequately available treatment for the waste collected by a new entrant evaluating the prospect of entry. Moreover, the use of evergreen contracts also presents a formidable barrier to potential competitors. Even if a potential competitor has a source for treatment of the waste (or sets up an autoclave), the competitor will not succeed unless it can gain access to existing generators of waste.

Entry barriers in the treatment market are largely regulatory in nature, and can impose quite significant costs and delays.

VIII.A.4. Pro-competitive efficiencies.

"Cognizable efficiencies" are defined in the *Merger Guidelines* as "merger-specific efficiencies that have been verified and do not arise from anticompetitive reductions in output or service."[20]

VIII.A.5. The "failing firm" defense.

The rescue of a failing firm—the last two step in the analysis under the *Merger Guidelines*—has its genesis in the narrow defense created by the Supreme Court in *International Shoe v. F.T.C.*, 280 U.S. 291 (1930), expanded to include a "failing division" defense as well. A merger is not likely to cause anticompetitive harm if imminent failure of one of the merging firms would cause the assets of that firm to exit the relevant market.[21]

The four criteria under the *Merger Guidelines* are i) the inability of the merging firm to meet its financial obligations in the near future, ii) the firm's inability to take advantage of the reorganization provisions of the bankruptcy

[17] *Merger Guidelines*, §2.1.

[18] *Id.*

[19] *Merger Guidelines*, §3.0.

[20] *Merger Guidelines*, §4.

[21] *Merger Guidelines*, §5.0.

laws, iii) the firm has made a good-faith effort to elicit alternative offers that pose less of a competitive threat than the proposed merger, and iv) the assets of the failing firm would exit the relevant market absent the proposed acquisition.[22]

VIII.B. Monopolization and attempted monopolization, Sherman Act §2.

Acquisition of all or substantially all of the operational assets for the removal and/or treatment of medical waste in a well-defined geographical market may not only violate §7 of the Clayton Act but may also constitute monopolization or an attempt to monopolize, in violation of §2 of the Sherman Act.

A §2 claim has two primary elements: i) the defendant possesses monopoly power in the relevant market, and ii) the defendants has willfully acquired or maintained that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.[23]

The "willful acquisition" element is established by showing that the defendant engaged in anticompetitive conduct.[24] Anticompetitive acts are

> acts, other than competition on the merits, that have the effect of preventing or excluding competition or frustrating the efforts of other companies to compete for customers within the relevant market.[25]

From an economic perspective, unilateral anticompetitive conduct is either exclusionary (non-price) or predatory (price) conduct.

VIII.B.1. Denial of access to "essential" treatment facilities.

Being denied access to treatment facilities by a defendant with market power may, under appropriate circumstances, support a monopolization claim. Usually, the defendant will be a vertically integrated firm with wholesale treatment facilities and a retail removal business.

Monopolization based on an alleged "refusal to deal" has received a great deal of recent attention. In particular, the Supreme Court's decision in *Verizon Comm. Inc. v. Trinko*[26] wields a certain influence over what a monopolization claim of this nature now entails.

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[22]*Merger Guidelines*, §5.1.

[23]*United States v. Grinnell Corp.*, 384 U.S. 563, 571 (1966). An attempt monopolize claim requires proof of a dangerous probability of the defendant achieving monopoly power in the relevant market instead of the defendant's possession of monopoly power. *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993). See the discussion of market power in Section VII.D., *supra*.

[24]See ABA Section of Antitrust Law, *Model Jury Instructions in Civil Antitrust Cases*, 2005 Edition (2005), Monopolization–General–Instruction 1–*Elements.*

[25]ABA Section of Antitrust Law, Model Jury Instructions in Civil Antitrust Cases (2005), Monopolization–General, Instruction 10, *Willful Acquisition of maintenance of Monopoly Power.*

[26]540 U.S. 398 (2004).

The "essential facilities" doctrine was mentioned by the *Trinko* Court, but the Court neither adopted nor repudiated it. Theoretically, then, the essential facilities doctrine remains intact as a viable approach to a §2 claim.

Nonetheless, the ABA Model Jury Instructions and the most strident supporters of the *Trinko* decision both recognize that some form of "forced sharing" claim under §2 survives *Trinko*. But while a narrow set of facts will justify an essential facilities claim, most cases can be prosecuted as more general monopolization claims based on exclusionary anticompetitive conduct.

One statement of the rule that places these cases in a more sympathetic context is that a "non-marginal case that involves a clearly dominant firm, clear foreclosure, and no obvious business justification should be well within the judicial capacity."[27]

Nonetheless, any enforcement case alleging a denial of access to treatment facilities is likely to be faced with one or more of a series of *Trinko*-inspired defenses.

VIII.B.1.a. First *Trinko* defense: Refusals to deal in intermediate goods—or without a prior course of dealing—are not actionable.

VIII.B.1.b. Second *Trinko* defense: Refusal-to-deal requires the defendant to sacrifice short-term profits.

VIII.B.1.c. Third *Trinko* defense: Forced sharing does not require investment in additional capacity or non-administrable remedies.

VIII.B.2. Evergreen provisions.

VIII.B.3. Exclusivity conditions and requirements contracts.

VIII.C. Agreement to allocate customers or territories, *per se* violation of Sherman Act §1.

A third type of claim is exemplified by the BFI-Stericycle agreements, about which Utah filed suit, in which an "asset swap" transaction was in functional terms a proscribed market allocation agreement, and a *per se* violation of §1 of the Sherman Act.

In this section we discuss the considerations relevant to the determination of whether an asset swap transaction is really a disguised *per se* §1 market allocation agreement. A *per se* violation creates the potential for criminal liability in those jurisdictions which have criminal antitrust authority.

VIII.C.1. *Per se* or rule of reason analysis?

If the principal purpose of a transaction between competitors is to "share or divide markets by allocating customers, suppliers,

[27]Herbert Hovenkamp, "Post-Chicago antitrust: A review and critique," 2001 *Colum. Bus. L. Rev* 257 (2001), at 322.

territories, or lines of commerce," courts have conclusively presumed, through the application of the *per se* rule, that the agreement is illegal under §1 of the Sherman Act (or the corresponding state statute).[28] Indeed, "[o]ne of the classic examples of a *per se* violation of §1 is an agreement between competitors at the same level of the market structure to allocate territories in order to minimize competition."[29] In such cases, the court will not inquire into the reasonableness of the arrangement, the facts peculiar to the business or industry involved, the nature of the restraint, its effect on competition, the history of the agreement, or the reasons for its adoption.

On the other hand, if the central purpose of the transaction is to promote competition through efficiency-generating integration, the agreement may be lawful under the §1 rule of reason standards and/or the standards relevant to §7 of the Clayton Act. A rule of reason analysis focuses on the state of competition with, rather than without, the relevant agreement. A detailed market analysis may not be necessary depending on the nature of the agreement.

A *per se* case often depends on a factual predicate being established before the *per se* analysis is appropriate. Thus, an inquiry into the factual circumstances underlying the agreement usually will be required. First, the enforcement official must make an initial determination as to whether the parties are predominantly horizontally-related competitors. If, for example, the restraint is a vertically-imposed territorial allocation designed to mitigate intrabrand competition and strengthen interbrand competition, *per se* condemnation in all likelihood will not be accepted by the courts. If it is determined that the parties are horizontal, interbrand competitors, however, the inquiry must then turn to the issue of whether the agreement in question lessens competition through the allocation of resources or promotes competition through efficiency-generating integration, an inquiry that requires examination of several, interrelated factual issues.

VIII.C.2. Are the parties horizontal competitors?

It is not necessary that the parties to the proposed transaction actually compete in the affected market(s) to run afoul of the *per se* prohibition against market allocation. It is enough that the parties are potential competitors who agree to allocate territories, routes, or

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[28] *Antitrust Guidelines for Collaborations Among Competitors*, Issued by the Federal Trade Commission and the U.S. Department of Justice, April, 2000, §3.2 ("*FTC-DOJ Collaboration Guidelines*"), available at: http://www.ftc.gov/os/2000/04/ftcdojguidelines.pdf, citing, *Palmer v. BRG of Georgia, Inc.*, 498 U.S. 46 (1990). This memorandum assumes that the applicable state statutes mirror the federal antitrust laws, and that federal precedent is persuasive.

[29] *U.S. v. Topco Associates, Inc.*, 405 U.S. 596, 608 (1972). The *per se* treatment of horizontal territorial allocations under §1 may have had its genesis in *U.S. v. Addyston Pipe & Steel Co.*, 85 F. 271 (6th Cir.1898), *aff'd*, 175 U.S. 211 (1899), although Judge (later Chief Justice) William Howard Taft left the door open to efficiency-enhancing justifications. The modern proposition that the horizontal division of markets is unlawful *per se* can be credited to *Timken Roller Bearing Co. v. U.S.*, 341 U.S. 593 (1951). See also, *U.S. v. Sealy, Inc.*, 388 U.S. 350 (1967).

customers.[30] Thus, an agreement not to compete between medical waste disposal firms operating in non-overlapping territories may still constitute a *per se* unlawful horizontal restraint.

VIII.C.3. What is the central purpose of the agreement?

Provided that the restraint is not vertically imposed, and thus not subject to the rule of reason on those grounds, application of the *per se* rule will still depend on whether the central purpose of the agreement is to lessen competition through the allocation of resources or to promote competition through efficiency-generating integration. Five factors that should be considered when making any such determination are:[31] a) The proffered business justification; b) The nature and disposition of the swapped assets; c) The structure of the transaction; d) The market impact; and e) The nature of the express non-compete agreement or barriers to entry (or re-entry).

VIII.C.3.a. The proffered business justification.

A procompetitive or efficiency-enhancing justification will not insulate a transaction from condemnation as a *per se* violation of §1. However, the absence of a feasible justification should weigh heavily against the legality of the transaction. A proffered justification should be tested against the factual circumstances. Some of the factual issues bearing on the legitimacy of a proffered business justification include:

i. Was the transaction independently initiated? Evidence produced by one or both parties that the decision to initiate the transaction was independently arrived at rather than through mutual or concerted decision-making supports the conclusion that the transaction has a legitimate business justification. Such evidence might consist of internal memoranda or minutes from board meetings.

ii. If a party is withdrawing from servicing a claimed "non-core" market, what was the reason for entering the market in the first instance? What independent analysis was undertaken, if any, concerning the efficiencies or cost-savings of withdrawing from that market? What circumstances have changed, if any, which support reversing the decision to enter the non-core market?

iii. Is there just one or more than one swap transaction? Multiple swap transactions resemble a coordinated effort to allocate the market, and therefore are less likely to be supported by a legitimate efficiency

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[30]See *Palmer v. BRG of Georgia,* 498 U.S. 46, 49-50 (1990) ("...[I]t is equally clear that the District Court and the Court of Appeals erred when they assumed that an allocation of markets or submarkets by competitors is not unlawful unless the market in which the two previously competed is divided between them. . . . [In *U.S. v. Topco Associates, Inc.,* 405 U.S. 596 (1972) the members] each agreed not to compete in the other's territories. Such agreements are anticompetitive regardless of whether the parties split a market within which both do business or whether they merely reserve one market for one and another for the other.")

[31]These factors were identified in Maurice E. Stucke, "Evaluating the Risks of Market Swaps," *Antitrust*, 18:1, Fall, 2003, pp. 67–71.

justification.

iv. What discussion or plans does the party have for pricing in the post-swap protected market? Evidence that one or both parties has considered post-transaction price increases militate against the proffered efficiency defense, the essence of which is to enhance profitability through lower costs rather than higher prices.

This list is not intended to be exhaustive, but rather indicative of the type of factual issues that bear on the legitimacy of a proffered business justification. Naked averments that such a justification exists should not be persuasive.

VIII.C.3.b. The nature and disposition of the swapped assets.

VIII.C.3.c. The structure of the transaction.

VIII.C.3.d. The market impact.

VIII.C.3.e. The nature of the express non-competition agreement.

VIII.C.4. Agreements of limited scope.

It is not necessary that the restriction involved cover all modes of competition to rise to the level of a *per se* violation of §1. Restrictions relating solely to advertising in certain territories, or only to certain product lines, may nonetheless constitute a *per se* unlawful territorial market allocation.

IX. Remedial measures

IX.A. Divestiture and other structural remedies.

Irrespective of the theory of the case, the remedy should have the ultimate effect of restoring competition. Accordingly, remedies should be sought based on a factually intensive, case-by-case analysis. For example, a merger that substantially lessens competition in the treatment market may be remedied by a "full-stop" injunction against the entire transaction. But, a divestiture condition that leads to an additional viable competitor may be effective at restoring competition. Such alternatives should be considered, particularly where credible claims of efficiencies are brought forward to justify a merger transaction,.

Where a monopolist has achieved its monopoly at least in part through acquisitions, structural reform (*i.e.*, a divestiture) has been a common and generally accepted remedy for Section 2 violations. This is because, in general, once-and-for-all remedies are preferable to continuing supervision by an antitrust court.

The *Policy Guide* points out that divestiture must include all assets necessary for the purchaser to be an effective, long-term competitor. It is not sufficient to attenuate market power through divestiture; the divestiture should also lead to increased competition. Accordingly, the divestiture of an existing business entity is preferred to the divestiture of a group of related assets. A divestiture remedy must include rights to critical inputs or intellectual property necessary to be a viable competitor.

However, the *Policy Guide* should be consulted for those cases in which divestiture of an existing business is not possible, although divestiture of certain assets that are less than an existing business will still be appropriate.

IX.B. Compulsory access to treatment facilities, establishment of new treatment capacity, and other remedies.

IX.C. Disgorgement

Disgorgement involves paying over to the government or a private party ill-gotten gains attributable to the violation, *i.e.*, the "fruits" of the violation. In a monopolization case, these gains might be represented by the monopoly rents earned by the firm, or the proceeds of its anticompetitive conduct. The states are generally permitted to seek disgorgement under their "little FTC acts," see *FTC v. Mylan Labs., Inc.,* 99 F.Supp.2d 1 (D.D.C., 1999).