BACKGROUND DOCUMENT

RESOURCE CONSERVATION AND RECOVERY ACT

SUBTITLE C - HAZARDOUS WASTE REGULATIONS

SECTION 3001 - HAZARDOUS WASTE MANAGEMENT SYSTEM: IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

PART 261

SUBPART A - GENERAL

SECTION 261.5 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE GENERATED BY SMALL QUANTITY GENERATORS

U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF SOLID WASTE

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I. INTRODUCTION

In enacting RCRA, Congress was responding to a problem about which it had little information. With respect to generators, the House Committee stated:

> One of the major problems to be addressed in the hazardous waste area is the lack of information concerning the components, volumes and sources of hazardous waste. To date there has been no survey or other wide ranging investigation of the sources of hazardous or potentially hazardous waste generation or disposal. As a result, little is known about the actual volume of hazardous waste being generated, the geographical distribution of the generators or the extent to which hazardous wastes are transported. (H.R. Rep. at 26).

Despite the general lack of information, Congress did not explicity provide EPA with a mechanism to exempt or exclude from Subtitle C regulation any persons generating or managing hazardous waste.

The Agency conducted studies during final rulemaking on the number of small quantity generators, the type and quantity of waste they generate, and the cost to the Agency and the states of regulating them. The Agency found that the number of hazardous waste generators is enormous, approximately 762,000, and that less than 10 percent of them generate 99 percent of all hazardous waste. In addition, the Agency found that to fully regulate all generators would exceed the capability of the Agency and the states to fully and effectively implement and enforce the Subtitle C controls.

The information developed in the rulemaking process has led EPA to adopt in the final regulations a system which incorporates various aspects of the different approaches suggested in the preamble to the proposed rule. The final regulation

sets an initial general exclusion for generators of less than a total of 1000 kg/mo of hazardous wastes; sets low (1 to 100 kg/mo) quantity exclusion limits for certain extremely hazardous wastes; and conditions these exclusions to assure that excluded wastes are disposed of in either authorized hazardous waste management facilities or facilities approved by a state to manage municipal or industrial wastes. This will allow EPA and the states to initially focus implementation and enforcement of the Subtitle C regulatory program on those generators who are presently producing 99 percent of all hazardous waste.

In addition, EPA has determined based on data available that a general exclusion level of 100 kg/mo would better achieve the environmental protection objectives of Subtitle C. Thus, the Agency intends to initiate rulemaking in not less than two years nor more than five years from the date of promulgation of Part 261 to expand Subtitle C coverage of small generators down to an exclusion level of 100 kg/mo. During this process, the Agency will consider the need for any special regulatory requirements to deal with any unique problems associated with these wastes.

This document explains the rationale and basis of the Agency's exclusion for small quantity generators. Chapter II discusses the rationale for the proposed standard. Chapter III summarizes the information used and developed in rulemaking: damage reports; public comments on the proposed standard; and, Agency environmental and economic impact studies of small quantity generator regulatory approaches. State programs for regulating small quantilties are also summarized. Chapter IV presents the Agency's rationale for

the final regulation. Small generators are characterized, the problems with determining de minimis quantities below which a waste is not hazardous are presented, and the Agency and state resource limitations are discussed. These analyses lead the Agency to conclude that an exclusion must be provided. The problems with using a degree of hazard system for determining which generators and which waste should be excluded are discussed, and the Agency's conclusion that an exclusion based on quantity of waste generated is presented. Alternative quantity cutoffs are analyzed which leads the agency to conclude that the initial cutoff should be 1000 kg/mo, but that the cutoff should be lowered within five years to expand Subtitle C coverage of small generators down to an exclusion level of 100 kg/mo. Finally, various options for regulating excluded generators are analyzed.

Chapter V discusses the final regulation language and suggests an approach a generator might want to take to determine in advance if he may exceed the generation limits in an up-coming calendar month.

II. PROPOSED STANDARD

A. Summary of Proposed Standard (§250.29)

The proposed standard exempted from regulation any person who produced and disposed of no more than 100 kilograms per month (kg/mo) of hazardous waste provided that his wastes were disposed in a facility that the state had permitted or certified as meeting the land disposal criteria that the Agency was to develop as required by Section 4004 of the RCRA, or in a permitted hazardous waste management facility.

The standard also exempted from regulation any quantity of hazardous waste (except waste oil) generated by retailers provided that the waste was disposed as indicated above.

Pesticide-related hazardous waste generated by farmers was also exempted under this Section. That portion of §250.29 dealing with hazardous waste generated by farmers has been analyzed in the document supporting the Part 262 regulations for generators.

B. Rationale for the Proposed Standard

The Agency proposed a small quantity generator conditioned exemption in an attempt to balance the need to protect public health and the environment with the need to hold the administrative and economic burden of regulating these waste within available resources. Given limited resources, the Agency proposed to minimize the requirements on small quantity generators in order to direct its attention to the greater hazards posed by larger quantities.

As expressed in the preamble to the proposed regulations, the Agency based the proposed exemption on very limited data. For example, no data was available to the Agency on non-manufacturing generators of hazardous waste. However, surveys of waste production by manufacturing industries in five states (New Jersey, Texas, Illinois, Tennessee and Maryland) and limited data presented in the Draft Environmental Impact Statement for Subtitle C, indicated that a cutoff of 100 kg/mo for hazardous waste generation would allow control of 99.5 to 99.9 percent of potentially hazardous industrial waste. At the same time the proposed cutoff would exclude up to 60 percent of the generators in the manufacturing industries (SICs 20-39). Thus, only a small fraction of hazardous waste would be exempt from full regulation while 60 percent of generators would be excluded. The Agency proposed a conditioned exemption to provide some protection against the mismanagement of exempted small quantities of hazardous waste.

The Agency proposed the retailer exemption because the Agency believed that retailers rarely generate hazardous waste, and when they do, only in very small quantities.

The Agency acknowledged that only limited data was available on the number of small generators and associated waste quantities, waste types, management practices, and environmental and economic impacts of regulatory options. Consequently, the Agency requested comments on several regulatory options outlined in the preamble to the regulation, and asked for suggestions for any other approaches. The suggested regulatory alternatives outlined in the preamble were:

1. Conditioned exemption of waste generated in quantities less than some other cutoff, up to 1000 kg/mo.
2. Conditioned exemption of a specific quantity of each hazardous waste depending on the degree of hazard of the waste.
3. Unconditioned exemption under Subtitle C of waste generated in quantities less than some cutoff where the exempted wastes are regulated in an approved manner by a State.
4. Reducing the administrative or technical requirements applicable to small quantity generators.
5. Phasing in the regulatory coverage of small quantity generators over time.

III. INFORMATION USED AND DEVELOPED IN RULEMAKING

A. Damage Incidents

The Agency has reviewed the more than 300 incidents involving hazardous waste that were selected from the EPA open files and summarized in the January 1979, Draft Environmental Impact Statement (EIS) for the Subtitle C Regulations to identify those incidents involving small quantities. The Agency also re-reviewed the open files to identify new incidents that involved small quantities that were reported since publication of the draft EIS.

Twenty-eight incidents have been reported that appear to involve hazardous waste in quantities of less than 5,000 kilograms (kg).* Twenty-one of the incidents involve quantities of 1000 kg or less and are summarized below. All of the incidents are summarized in more detail in Appendix A to this background document.

These incidents must be interpreted with caution. First, they may not be representative of incidents involving small quantities because the Agency has not actively attempted to obtain damage reports involving small quantities. Furthermore, there is no direct correlation between the small quantities involved in most of the incidents and the quantity of hazardous waste produced by the generator in a particular time period (i.e., the small quantities may have been generated by large

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*For the purposes of this evaluation, hazardous waste in quantities of less than 5000 kg were considered to be small quantities.

generators). Nonetheless, these incidents do provide some indication of possible environmental impacts that can be associated with small quantities.

The Agency believes that these incidents indicate that:

1. Small quantities of hazardous waste can pose substantial hazard when indiscriminately dumped;
2. The handling of 55 gallon drums (with a capacity of approximately 200 kg) of ignitable, reactive and corrosive waste at managed landfills has resulted in damage to public health;
3. The mismanagement of empty pesticide containers which have been improperly decontaminated has resulted in damage to public health.

Summary of Incidents Involving 1000 kg or less

(21 Incidents)

1. Indiscriminate Dumping (5 incidents). One incident involved the contamination of a drinking water reservoir, three others involved drinking well contamination, one of which resulted in 13 illnesses. Three of the incidents involved quantities of 100 kg or less.
2. Disposal In (and Transport to) Managed Landfills (11 Incidents). Eight incidents involved single containers (200 kg or less) of ignitable, reactive, or corrosive wastes, two of which resulted in the deaths of landfill operators and a third in an operator being burned over 80 percent of his body.

No damage incidents were reported for quantities smaller than 100 kg/mo disposed of in managed facilities.

3. Mismanagement of Pesticide Containers (5 Incidents). These five incidents resulted from the reuse of improperly decontaminated pesticide containers. Two incidents resulted in deaths and the other three resulted in severe illness.

B. Comments on Proposed Standard

The Agency received approximately 400 comments on the issue of regulating small quantity generators. The comments offered most fequently are summarized below, organized by issue. The issues raised by these comments have been considered in development of the final regulation and are addressed in the following sections of this document. In addition, other comments from the public on the proposed regulations not specifically addressed in those sections are presented and analyzed in Appendix B to this document.

1. Consideration of quantity in defining a hazardous waste
   - The RCRA mandates that quantity be considered in determining whether a waste is hazardous.
2. Should small quantity generators be exempted from certain generator requirements?
   a. No, because the RCRA requires that all quantities of hazardous waste be fully regulated, and full regulation is necessary to protect health and the environment.
   b. Yes, because

1) health and the environment cannot be effectively protected if all generators are fully regulated. Given the large number of generators and the limited state and Agency administrative resources, attention will be diverted from enforcement of controls on large generators and the permitting of storage, treatment and disposal facilities which pose the greatest hazards, and,

2) the cost of fully regulating all generators (i.e., small generators) is excessive and not worth the protection achieved.

3. How should an exemption cutoff be establish?

a. Set an exemption cutoff lower than 100 kg/mo to protect health and the environment.

b. Set an exemption cutoff higher than 100 kg/mo (e.g., 1000 kg/mo) because:

1) The capacity of treatment and disposal facilities that can meet the Subtitle C standards is severely limited. The limited capacity should be used for large quantities of waste beause they are more hazardous due to their quantities.

2) The cutoff should be higher to reduce the administrative burden on the regulators so that limited resources can be focused on the bigger problems posed by waste management facilities and large generators.

3) The cutoff should be higher because the high cost of regulation to small generators is not worth the environmental protection achieved.

c. Set exemption cutoffs based on degree of hazard because:

1) The Agency has a legislative mandate to consider degree of hazard. Several states developed hazardous waste regulations based on degree of hazard.

2) Some wastes are extremely hazardous in small quantities and should be fully regulated while other waste even in large quantities are only moderately hazardous.

3) Limited Agency and state administrative resources should be applied to only those waste quantities that are truly hazardous.

4) The economic burden on the regulated community should be minimized by regulating only those quantities that are truly hazardous.

5) Limited Subtitle C facility capacity should be used only for the truly hazardous waste quantities.

4. <u>What requirements should apply to exempted generators</u>?

a. Facilities certified by states as meeting the land disposal criteria promulgated under Subtitle D of the RCRA ("D" facilities) will not provide adequate protection of health and the environment for small quantities of hazardous waste because:

1) Without de minimis quantities for each waste below which it is not hazardous or without exemption cutoffs for each waste based on degree of hazard, small quantities of extremely hazardous waste will be disposed of in "D" facilities.

2) "D" facilities have no provisions for groundwater monitoring.

3) There will be no way to monitor the quantity of hazardous waste received in a particular "D" facility; some "D" facilities may receive large aggregate quantities of small generator hazardous waste. "D" facilities are not required to comply with any financial requirements as are "C" facilities.

4) Hazardous waste will not be identified and thus the operator is neither able to reject the material, if desired (or if required under a permit), nor aware that special handling precautions may be appropriate; also, operators cannot anticipate or control adverse effects of mixing wastes.

b. Allowing small quantity generators to dispose of their waste in "D" facilities in lieu of "C" facilities will not provide any actual economic relief because there are no "D" facilities that are currently certified by states, and there may be few facilities certified over time because of slow, or lack of, state action. Therefore, disposal in existing landfills and incinerators should be allowed

to effectively reduce the cost burden of disposal in "C" facilities.

c. Miscellaneous comments:

1) Require disposal in a "C" facility but exempt small generators from the generator reporting requirements.

2) Some commentors said that a manifest is required to protect health and the environment and others said it was not.

3) Subtitle C shipping requirements for generators and transporters are necessary to protect health and the environment.

5. Should small quantity generator regulations be phased?

a. Phasing would allow the Agency and the states to focus limited resources initially on large quantities (i.e., large quantity generators, transporters and storage, treatment and disposal facilities);

b. Phasing would allow time for the expansion of "C" facility capacity;

c. Phasing would provide time to enable the Agency to collect data on the environmental and economic impacts of regulating small generators to determine which wastes need to be regulated in smaller quantities.

C. Environmental and Economic Impact Studies

To gather additional information on this issue, the Agency conducted two studies on waste produced by small quantity generators: Technical Environmental Impacts of Numerous Approaches for Regulating Small Volume Hazardous Wastes Generators

December 10, 1979; and Economic Impacts of RCRA Approaches to the Regulation of Generators of Small Volumes of Hazardous Wastes, January 5, 1980. These studies, hereinafter referred to as "Agency studies," were released for public comment on January 10, 1980, and by notice in the Federal Register on that same date, public comments on the data presented in the reports were invited. Those comments are summarized and analyzed in Appendix C of this document.

In addition, as required by Executive Order 1204A the Agency has developed a report which defines the key activities and associated resource requirements to implement all of the Subtitle C regulations. The report is entitled, "Operations/ Resource Impact Analysis: RCRA Subtitle C." A draft of this report was developed in Fall 1978 and was included in the administrative record for the Subtitle C regulations. The final report is dated March 25, 1980.

D. Examination of State Programs

State hazardous waste programs were reviewed to determine how states regulate small quantity generators. By January, 1980, 15 states were implementing generator regulations, 11 states had developed draft regulations, and many others were in the drafting process. Most states without regulations in place are apparently waiting for the Agency to promulgate final generator regulations under Subtitle C before issuing their final regulations.

Eighteen of the 26 states with final or draft generator regulations provide complete or partial exemption for small

quantity generators. The other states concentrate (or plan to concentrate) their resources on the largest generators. The small generator exemption criteria and compliance requirements for the 18 states are summarized in Table 1. About two thirds of the states exempt small generators on the basis of waste type and quantity, while the others exempt them on the basis of waste quantity only. Two-thirds of these states with exemption provisions require that the exempted waste be disposed of in an approved facility.

Based on this examination of State programs, the Agency concludes:

1. Most states with hazardous waste control programs have recognized the need to provide special treatment for small quantity generators.
2. Most states with special provisions for small quantity generators consider degree of hazard of the waste but the degree of hazard systems vary substantially, and
3. Most states with special provisions for small quantity generators still retain control over where the waste is disposed (i.e., in an approved facility.)

The Agency did not develop or support the small quantity generator standard on the basis of the state experiences. However, it is interesting to note that the conclusions the Agency reached as a result of its independent analysis of small generator regulatory options reflect the experiences of the state programs -- small generators cannot be fully regulated, some control over where the waste is disposed must be provided, and special consideration must be given to extremely hazardous waste.

Table 1

SMALL GENERATOR EXEMPTION CRITERIA AND WASTE MANAGEMENT REQUIREMENTS
IN STATES WITH MANAGEMENT DISTINCTIONS BETWEEN LARGE AND SMALL VOLUME GENERATORS

EPA Region	State	Date of Regulation	Status of Regulation	Exemption Criteria					Compliance Requirements For Exempted Generators			
				Waste Type and Quantity			Waste Quantity Only	Waste Oil Only	Disposal in SW Facility	Lesser Admin. Reqmnts	No Compliance Reqmnts	Reqmnts Undecided Unavailable
				Explicit Cutoffs for Specific Categories[1]	100 kg/mo General Guideline[2]	No Explicit Guidelines[3]						
III.	Maryland	7/78	I	X					X			
II.	Georgia		D				100 kg/mo		X			
	Kentucky	10/79	E				1.3 tons/yr		X			
	Mississippi	/79	D				100 kg/mo		X			
	S. Carolina		P		X				X			
	Tennessee	12/79	P		X				X			
V.	Michigan	11/79	C	X								X
	Ohio	1/80	D				100 kg/mo					X
	Wisconsin	/80	D				100 kg/mo					X
VI.	Arkansas	11/79	D				100 kg/mo		X			
	Louisiana	8/79	I			X			X			
	Oklahoma		I		X				X			
	Texas		I	X					X			
VII.	Kansas		I					330 gal/yr			X	
	Missouri	1/80	I					100 gal/mo			X	
X.	Oregon[4]	5/79	I	X			2000 lbs/yr		X	X		
	Washington	1/78	I	X					X			
				5	3	1	7	2	12	1	2	3

I = in place
E = temporary emergency regulations
P = proposed
D = draft form

[1] State regulations contain specific quantit cutoffs for one or more waste categories defined within the regulations.

[2] A 100 kg/mo exemption cutoff is applied to most hazardous wastes; however, specific wastes considered more or less hazardous than most may be assigned lower or higher cutoffs by the state.

[3] State regulations allow exemptions to be granted on a case-by-case basis for generators of small quantities of hazardous waste.

[4] Oregon has two small generator exemption groups which have different exemption criteria and management requirements.

IV. RATIONALE FOR FINAL REGULATION

A. Profile of Small Quantity Generators

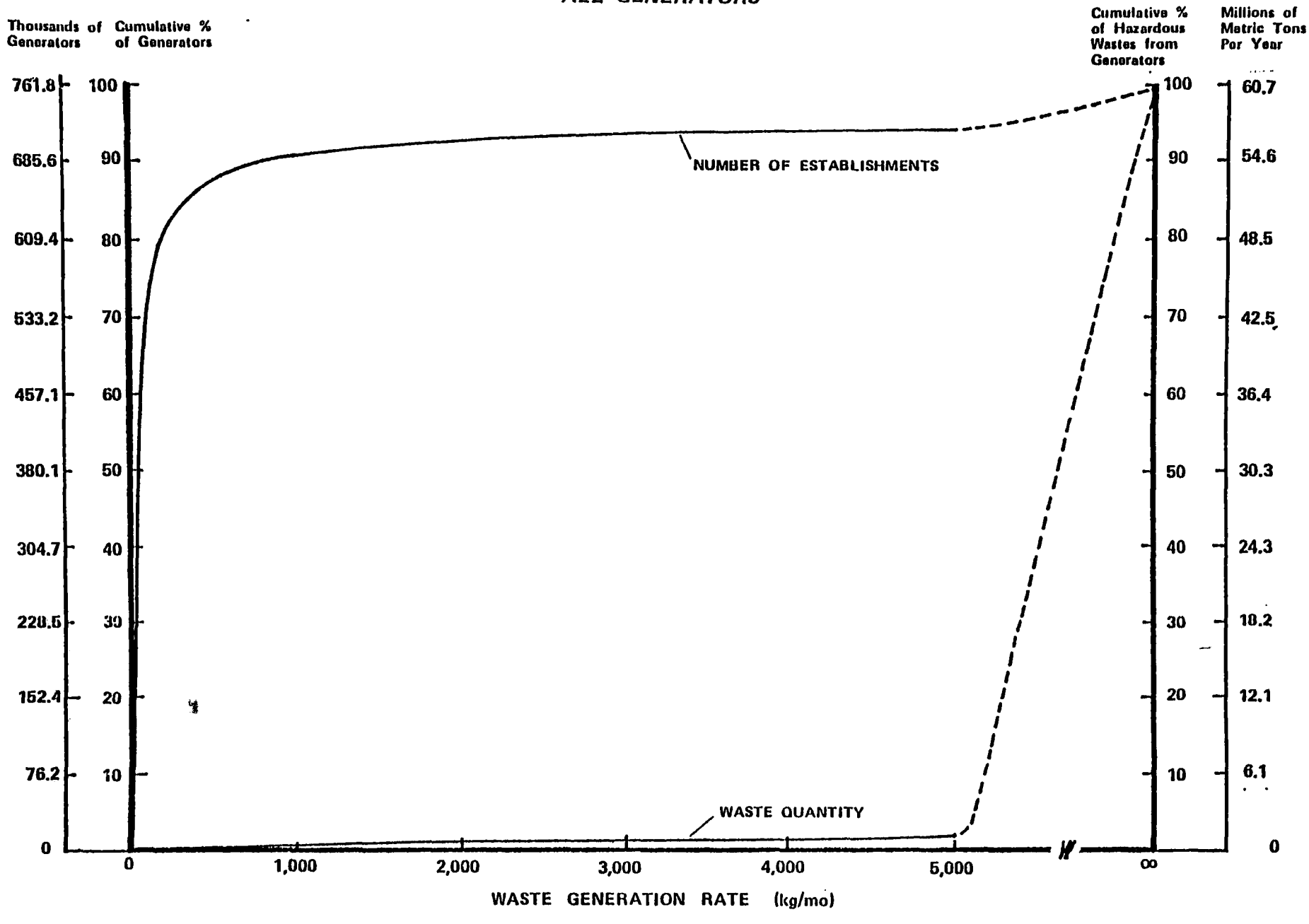
In the preamble to the proposed regulations the discussion of the small generator issue stated that the Agency had limited data on the number of small quantity generators and the type and quantity of waste they generate. However, the Agency believed that the number of generators were too large to make full regulation of all generators practical. The Agency has re-examined this premise in developing the final regulations.

Number of Generators and Waste Quantities

The number of hazardous waste generators is immense, totalling approximately 762,000 according to the Agency studies. The number of generators begins to increase rapidly at waste generation rates below 1000 kg/mo, and increases tremendously at generation rates of less than 100 kg/mo. (See Figure 1 and Table 2.) The waste quantities produced by small generators are nearly insignificant compared to the total quantity of hazardous waste generated annually. For example, generators of more than 1000 kg/mo generate 99 percent of the total quantity of hazardous waste, and generators of more than 100 kg/mo generate 99.8 percent of the total quantity of hazardous waste. In terms of absolute quantities, however, the aggregate quantity generated by these small generators may be substantial: one percent of the total quantity of hazardous waste generated annually amounts to 600,000 metric tons of hazardous waste. However, this waste is widely dispersed nationally, as indicated by the

Figure I

NATIONAL HAZARDOUS WASTE GENERATION PROFILE
ALL GENERATORS



concentration of small generators in the non-manufacturing sector as discussed below.

Table 2

Hazardous Waste Generator Profile

Generator Exclusion Level (kg/mo)	Generators Regulated		Waste Regulated	
	Number	Percent	Metric ton (per year)	Percent
0	762,000	100	60,600,000	100
100	200,000	26	60,500,000	99.8
1000	67,000	9	60,000,000	99.0
5000	40,000	5	59,300,000	97.8

Types of Generators

The types of business activities generating small quantities of hazardous waste differ markedly from those generating large quantities. In contrast to large quantity generators of which more than 80 percent are from the manufacturing sector, over 89 percent of the small generators--those producing hazardous waste at rates of less than 1000 kg/mo--are from the non-manufacturing sector. These generators are scattered among such diverse sectors as construction, special trade contractors (e.g., plumbers, electricians), secondary schools, and local transportation systems. Gasoline service stations and automobile repair garages (for wastes other than waste lubricating oil) comprise nearly 30 percent of these non-manufacturing small generators of hazardous waste (see Table 3).

Table 3

Industries With Large Numbers of Generators of Less Than 1000 kg/mo of Hazardous Waste *

Industry	SIC(s)	Number of Generators	Waste Quantity (Metric Tons/year)
Gasoline Service Stations	5541	130,000	189,000
Construction, Special Trade Contractors (e.g., Plumbers, Electricians)	1711, 1792, 1751, 1761, 1795, 1799	125,000	15,000
Auto Repair Garages	7538	32,000	50,000
Painting, Paper Hanging and Decorating Contractors	1721	27,000	5,000
Dry Cleaning Plants	7216	25,000	34,000
Auto Body, Paint, Upholstery Shops	7531-35	23,000	10,000
Secondary Schools	8211	21,000	6,000
Miscellaneous Repair Services	76	21,000	64,000
Coin-Operated Dry Cleaners	7215	15,000	7,000

* For purposes of this analysis, waste oil was not considered a hazardous waste. Also, retailers and farmers were excluded from this analysis.

B. Need for a Small Quantity Exclusion

De Minimis Quantities

The Agency has considered whether small generator wastes are hazardous under the statutory definition in Section 1004(5) of the Act and has determined that a plausible mismanagement scenario can be developed for many of the wastes listed or identified in Part 261 whereby the waste meets the hazardous definition in any quantity. The damage reports summarized earlier provide examples of several mismanagement scenarios. For some wastes listed or identified in Part 261, there may be a de minimis quantity below which the waste is not hazardous. However, the Agency has not been able to identify the de minimis quantity for those wastes at this time on a before-the-fact (i.e., damage) basis, and, therefore, considers any quantity of waste listed or identified in Part 261 to be hazardous.

The problems with determining de minimis quantities were impossible to overcome during the rulemaking process. Conceptually, to determine the de minimis quantity of a waste, the greatest potential hazard to health and the environment posed by a waste must be determined and then an assessment must be made of whether that hazard is substantial. The hazard a waste poses is a function of its intrinsic hazard and the exposure of the public and the environment to that hazard considering the quantity

of waste produced and plausible mismangement scenarios that result in the greatest hazard. Secondary hazards created during management (e.g., toxic combustion products formed by incinerating the waste or by co-incineration with other waste; toxic substances in leachate formed by the interaction of wastes) must also be considered. All of these factors -- intrinsic hazard, waste quantity, plausible mismanagement scenarios, seconary hazards created -- vary for each generator producing a waste listed or identified in Part 261. For example, intrinsic hazard of a waste depends on factors such as its relative toxicity, its carcinogenic, mutagenic, teratogenic, and bioaccumulative properties, its flash point, and its corrosive and reactive properties. The hazard posed by plausible mismanagement scenarios is a function of factors such as proximity to population centers, rainfall, depth of ground water, attenuation in the soil, biodegradation, dillution in water, and other sources of waste in the same area.

Thus, conceptually, a de minimis quantity should be developed for each waste produced by each generator because the factors that determine potential hazard are a function of the characteristics of each waste and the plausible mismanagement scenarios available to the generator. Given current knowledge and the legislative mandate for timely control of hazardous waste, the Agency has not been able to develop de minimis quantities and, therefore, considers any quantity of a waste listed or identified in Part 261 to be hazardous in accordance with the statutory definition.

Infeasibility of Fully Regulating All Generators

Agency and State Administrative Responsibilities. The Agency's economic impact study estimated Agency and state unit costs for implementing and enforcing the Part 262 generator regulations for generators of less than 5,000 kg/mo. These costs in terms of work-minutes per generator are presented in Table 4.

These cost estimates indicate that only 12 percent of small generator regulatory costs are one-time costs. Thus, regulating small generators will continue to require substantial resources after the first year of regulation.

An Agency and state administrative responsibility that was not considered in the Agency study is assisting generators upon request in understanding the regulations and their responsibilities. The work load required for such assistance could be substantial, especially for the smaller generators. For example, few small generators (see Table 3) are likely to be familiar with the hazardous waste regulations, including relatively complex requirements such as the the Department of Transportion shipping requirements adopted by the Agency for generators shipping hazardous waste off-site. Not only might the one-time costs of such assistance be substantial, but recurring assistance requests may be substantial because of the dynamics of small businesses (i.e., changes in management, and openings and closings).

Administrative Shortfalls. The Agency considered data presented in two reports in evaluating the administrative

Table 4

Agency and State Workload for
Regulating Small Generators

	Work-minutes	%	% Excluding One-time cost
One-Time Costs			
Review notification documents	25	12	---
Recurring costs (i.e., annually)			
Review generator exception reports	5	2	3
Enter annual generator reports into			
ADP System	15	7	8
Inspection	16	8	9
Enforcement	144	70	80
Total work-minutes in first year	205		
Total recurring work-minutes	180		

burden on the Agency and the states of regulating small generators: the Agency economic impact study that evaluated regulatory options for small generators (Small Generator Study), and the Agency-developed "Operations/Resource Impact Analysis: RCRA Subtitle C" (ORIA) that projected Agency and state resource requirements for the final Subtitle C regulations. The reports used different methodologies in developing workload projections and projected different workloads. The Small Generator Study used unit cost estimates of all Subtitle C Agency and state activities to project workload requirements from 1981 to 1985. The ORIA did not estimate unit costs, but rather developed estimates of workload requirements for each activity from 1981 to 1985. The ORIA then considered factors such as the status of each state's regulatory program, the relative size of the state program, and the year in which a state is likely to receive interim authorization under Section 3006 of RCRA.

The Small Generator Study projected resources available to the Agency and the states for implementing and enforcing the Subtitle C regulations from 1981 to 1985, and compared resources available to resources required. The ORIA projected resources available only for 1981.

Although the two studies used different workload and available resource assumptions, they both indicate that there will be a substantial shortfall in available resources if all generators are fully regulated (see Table 5).

Table 5

Projected 1981 Workloads And Shortfalls

Exclusion Level	Small Generator Study*		ORIA†	
(kg/mo)	Workyears	% Shortfall	Workyears	% Shortfall
5000	2135	3	---	---
1000	2180	5	1845	0
100	2395	15	2060	12
0	3315	59	2980	62

* The small generator study projected that 2080 workyears would be available in 1981. Workloads shown were calculated from data reported in the Agency study.

† The ORIA projected that resources required would equal resources available in 1981 at an exclusion level of 1000 kg/mo. The ORIA did not consider workloads for lower exclusion levels. Therefore, the small generator study workload requirements for regulating generators of less than 1000 kg/mo were used to project shorfalls using the ORIA baseline workload requirements at an exclusion level of 1000 kg/mo.

If all generators were fully regulated, then other aspects of the Subtitle C regulatory program could not be fully and effectively implemented and enforced. For example, to offset the shortfalls in 1981 that would occur at various exclusion levels, the Agency and the states could reduce waste management facility permitting efforts as shown in Table 6.

Table 6

1981 Reduction in Facility Permits To Offset Resource Shortfalls At Various Small Generator Exclusion Levels *

Exclusion Level (kg/mo)	Small Generator Study		ORIA	
	Fewer Permits	Percent Reduction	Fewer Permits	Percent Reduction
5000	230	5	None	
1000	415	10	None	
100	1310	31	440	40
0	4183 +	100	1140 +	100

* The reduction in permits shown is actually a reduction in equivalent permits calculated by dividing the workyear shortfall by the average workload required to permit a facility. The shortfalls at an exclusion level of 0 kg/mo exceed the resources allocated to permitting in 1981. (The two studies used different assumptions for the permitting workload in 1981, the workyear requirements per permit, and the number of facilities to be permitted.)

Both analyses indicate that if all generators are to be fully regulated, the Agency and the states cannot conduct any permitting activities in 1981 and in addition, must reduce other implementation and enforcement efforts to offset the remaining shortfall.

The Agency belives that public health and the environment would be better protected by excluding some small generators from full regulation and applying the available Agency and state resources to the regulatory controls for large generators, transporters, and waste management facilities. Without an exclusion, other activities such as permitting facilities must be curtailed in lieu of regulating small generators.

C. Analysis of Approaches to Exclude Small Quantity Generators From Full Regulation

After the Agency determined that some exclusion of generators was necessary in order to implement the program, the Agency considered two basic approaches to define excluded generators: (1) setting different exclusion levels for each waste or type or class of waste based on the degree of hazard presented by the waste; or (2) setting a generator exclusion level based only on consideration of the quantity generated.

Degree of Hazard Exclusion Approach

Many commenters argued that basing exclusion levels on degree of hazard would: 1) more efficiently apply limited Agency and state administrative resources to the more hazardous waste, 2) reserve limited hazardous waste treatment and disposal facility capacity for the more hazardous wastes, 3) fully regulate small quantities of extremely hazardous wastes, and 4) reduce the economic burden on generators of less hazardous wastes.

The suggestions made by the commenters varied substantially as to the exclusion level for a given class of hazard, and as to the complexity of the hazard classification system. For example, one group of commenters proposed that the exclusion level be at or near zero for highly hazardous waste and range to 100 kilograms per month (kg/mo) or more for less hazardous waste. Others proposed that the exemption level be 100 kg/mo for highly hazardous waste and range to

1000 kg/mo or more for less hazardous waste.

The consideration of degree of hazard relative to a small quantity exclusion cannot be separate from the broader issue of consideration of degree of hazard in developing all of the Subtitle C controls. Many commenters argued for classification of wastes by degree of hazard to accomplish one or more of these objectives: (1) phasing regulatory coverage of hazardous wastes to deal with the most hazardous waste first; (2) tailoring of the waste management requirements to avoid over-regulating some wastes and thus, imposing on unnecessary economic burden, and (3) setting threshold levels for exclusion of small quantity generators from full regulation. Suggestions on how to develop the degree of hazard system varied significantly in approach and complexity. Commenters generally suggested basing degree of hazard determinations on either intrinsic hazard of a waste as determined by its physical and chemical properties, or on the probable exposure to the hazards of a waste based on its management.

The Agency's response to the degree of hazard comments is contained in the Degree of Hazard Background Document. As explained in that document, the Agency decided not to incorporate a degree of hazard system in the final regulations for two reasons:

(1) The Agency does not believe that any of the degree of hazard systems suggested by commenters (or any it could conceive itself) are technically and legally

defensible in terms of distinguishing different levels of hazard and relating management standards to them, and

(2) The Agency believes that the final regulations when fully promulgated will achieve the objectives of a degree of hazard system and, thus, a degree of hazard system is unnecessary.

However, to the extent possible the Agency considered level of hazard in establishing small quantity exclusions. The Agency believes that a limited number of wastes clearly present such a substantial hazard, even in very small quantities, that a low exclusion level is necessary to adequately protect public health and the environment. These wastes include wastes related to certain commercial products such as discarded products, off-specification products, product containers, and contaminated material resulting from a discharge of those products. The exclusion levels for these wastes range from 1 kg/mo to 100 kg/mo and are discussed in other background documents to Part 261.

This provision for lower exclusion levels for extremely hazardous wastes addresses the hazard posed by certain empty pesticide containers. As discussed in Section III-A, the Agency found five incidents of damage from empty pesticide containers that were not properly decontaminated or disposed. Three of the five incidents involved 55 gallon drums that held parathion (see Appendix A) and the only deaths reported

(two) involved the parathion containers. Given that parathion is on the §261.33(e) list of extremely hazardous commercial products and that §261.5(c) excludes only those product containers that are smaller than five gallons in capacity, the type of parathion container involved in the incidents will be fully regulated.

The Agency expects to set low exclusion levels for additional wastes as data is available to support them. In addition, a petition mechanism is established in Part 260 whereby the public can request amendments to the Subtitle C regulations. This mechanism can be used to propose setting lower exclusion levels for any hazardous waste or class or type of hazardous waste.

Although the Agency considered degree of hazard to the extent possible in establishing exclusion levels, the Agency does not agree with some of the reasons several commenters suggested for adopting a degree of hazard system. The Agency does not agree that, given that some hazardous waste must be excluded from full regulation, a degree of hazard system is needed to reserve limited hazardous waste treatment and disposal facility capacity for the more hazardous waste. The total contribution of waste from generators of less than 1000 kg/mo, for example, is only one percent of the total quantity of hazardous waste, and accordingly, it does not appear that sending these wastes to permitted facilities would significantly exacerbate any capacity shortfall.

The Agency also disgrees with the commenters arguments that the cost burden to generators should be considered or that the cost of regulation outweighs the resultant environmental benefits. For reasons discussed in other documents supporting the Part 260-265 regulations, the Agency may not under the RCRA engage in cost/benefit analyses to develop or support its regulations. Cost impacts may be considered only to the extent that they may have environmental impact ramifications, as discussed in other sections of this document.

Waste Quantity Exclusion Approach

In cases in which the Agency could not set exclusion levels based on hazard alone, the Agency has decided to identify an exclusion level for small quantity generators based on waste quantity. The Agency believes that a waste quantity exclusion approach is reasonable because small generator wastes pose less hazard than large quantity generator wastes in the aggregate, and, in most cases, individually. The Agency has concluded that small generator wastes pose less hazard because: 1) the hazard a particular waste poses in a given management scenario is often proportional to its quantity, 2) the Agency study of small generator wastes indicates that there are no special or unique hazards posed by small generator wastes (i.e., degreasing solvents generated by small service stations generating less than 100 kg/mo are similar in inherent hazard to degreasing solvents generated by mass transit service garages generating

3,000 kg/mo; and 3) small generator wastes (i.e., less than 5,000 kg/mo) in the aggregate amount to only 2.2 percent of the total quantity of hazardous wastes.

D. Analysis of Alternative Quantity Cutoffs

In considering alternative exemption cutoffs between zero and 5,000 kg/mo, the Agency considered both environmental impacts and the administrative impacts on the Agency and the states. Economic impacts on generators were also evaluated but were not used to develop or support the Agency's decision.

Administrative Considerations

EPA has evaluated the resource requirements on the Agency and the States to regulate small quantity generators. Administrative resource requirements for small generators affect the overall level of protection of public health and the environment because, given finite resources, they reduce the resources that can be applied to regulating large quantities.

The Agency and state administrative resource shortfall increases as more small generators are fully regulated (see Table 5). The Small Generator Study indicates that there will be a shortfall even at a cutoff of 5000 kg/mo while the ORIA indicates that shortfalls will not occur unless the cutoff is less than 1000 kg/mo. However, both studies indicate dramatic increase in the shortfall when the exclusion level is lowered from 100 kg/mo to 0 (i.e., no exclusion) because of the enormous increase -- 560,000 additional generators -- in the number of generators regulated (see Table 2). Although the shortfall at a cutoff of 100 kg/mo is substantial, the shortfall at a 0 kg/mo cutoff is nearly

four times the 100 kg/mo shorfall according to the Small Generator Study, and more than five times the 100 kg/mo shortfall according to data in the ORIA study. At a cutoff of 100 kg/mo, Agency and state resource shortfalls are substantial: 315 workyears according to the Small Generator Study, and 215 workyears according to the ORIA (ee Table 5). To offset those shortfalls, implementation and enforcement of some other Subtitle C controls must be curtailed. Table 6 shows that waste management facility permitting efforts, for example, would have to be reduced by approximately one-third to offset the cost of fully regulating all generators producing more than 100 kg/mo.

At a cutoff of 1000 kg/mo, the shortfall is reduced to 100 workyears according to the Small Generator Study, and the ORIA indiates there will be no shortfall. The 100 work-year shortfall projected by the Small Generator Study amounts to a five percent shortfall which the Agency does not consider to be subtantial given the level of accuracy of the projections.

The Agency concludes from this analysis that an initial exclusion level of 1000 kg/mo will provide a greater overall level of environmental protection than lower levels. This will allow the Agency to focus available resources on fully regulating large quantities during the early years of regulation implemenation rather than expanding the scope of regulatory coverage and achieving ineffectual implementation of a more ambitious program. This level will enable EPA to

direct its attention to the effective regulation of 99 percent of the total wastes generated, and will entail only insignificant, if any, sacrifices in the task of permitting hazardous waste management facilities.

The resource constraints and shortfalls have direct significance for the operation of the entire regulatory program. To expand the coverage to smaller generators would require direct sacrifices from other elements of the program, most notably regulation and enforcement of large generators, permitting of treatment, storage and disposal facilities, and enforcement of large generators, permitting of treament, storage and disposal facilities, and enforcement and inspection of these facilities. Furthermore, with greater resource demands and projected shortfalls, greater difficulties are likely in the ability of States to obtain authorization to administer the program in lieu of the Federal government.

Given the enormity of the implementation task and the limited administrative resources, EPA has been forced to make difficult allocation decisions. Expanding the coverage of generators would entail direct sacrifices from other essential program components. The determination of the proper exclusion level in the final regulation represents a complicated balancing of a variety of factors. The decision reflects a judgment by the Agency that the overall environmental objectives will be best served by selecting a level which promises full and effective implementation of all elements of the program rather than one that promises ineffective implementation of a more ambitious program.

Environmental Considerations

The information on environmental impacts which the Agency was able to develop was not fully conclusive in determining a specific exclusion level. Of the factors considered, damage incidents were the most revealing. The review of damage reports tends to support a 100 kg/mo exclusion level. First, there were only three damage incidents involving quantities below that level and all three resulted from indiscriminate dumping rather than from disposal in a managed facility. This suggested that disposal of less than 100 kg quantities in a managed facility other than a "C" facility might provide sufficient environmental protection.

In addition, the damage reports indicated that 55 gallon drums of ignitable, reactive and corrosive wastes pose a substantial hazard at managed landfills. These drums apparently contained approximately 200 kg or less. The problem appeared to be that the operators were not aware of the hazardous contents because the drums were apparently not market or labelled. Even if they were adequately marked and labelled, it is questionable whether typical municipal and industrial waste landfill operators are properly trained to handle these wastes in these quantities. Consequently, these drums should be fully regulated to require compliance with EPA and DOT shipping requirements and to require and ensure delivery to a facilty with trained personnel and adequate emergency equipment and procedures (i.e., a facility permitted under Subtitle C). A cutoff of 100 kg/mo would ensure regulation of all full drums. A higher exclusion level would not provide this assurance.

The Agency, however, has been relunctant to place too much emphasis on its reports of damage incidents because the incidents reported may not be representative of small quantity damage incidents given that the agency has not actively attempted to obtain damage reports involving smal quantities. In addition, as discussed in Section III-A, these incidents may not be representative of incidents actually involving wastes generated by small quantity generators (i.e., the wastes may have been generated by large quantity generators).

The environmental impact analysis also indicated that small generator hazardous waste are typically mixed by the generator with non-hazardous wastes and subsequently disposed with those wastes.

At an exclusion level of 100 kg/mo, the Agency study reports that non-manufacturing generators account for 92% of the generators and 82% of the hazardous waste. This has two important ramifications. Because non-manufacturing establishments, especially those in this size group, can be expected to dispose of their waste off-site with other mixed municipal waste, 82 percent of small generator hazardous waste can be expected to be so disposed. In addition, because non-manufacturing establishments can be expected to be evenly distribured with population (e.g., secondary schools, plumbers, painters, dry cleaners) 82% of the small generator waste can be expected to be evenly distributed in the mixed municipal waste disosal facilities across the country. Given that approximately 132 million metric tons per year of non-hazardous solid waste are disposed of in these facilities,

this results in a non-hazardous to hazardous waste ratio of approximately 900 to 1 at a cutoff of 100 kg/mo. For example, a 200 ton per day municipal landfill could be expected to receive only about 0.2 tons per day of small generator hazardous waste if the exclusion level were 100 kg/mo.

Although the other 18 percent of the waste generated by generators of less than 100 kg/mo is produced by manufacturing establishments, most of that waste can also be expected to be disposed of off-site with mixed municipal waste. Of the remaining fraction of small generator hazardous waste which may be managed on-site, it is not known whether it will be mixed with nonhazardous waste, or if so, in what ratios. Therefore, it is not possible to access the hazard of disposing of that fraction of small generator waste. Hypothetically, a small generator could landfill 99 kg/mo of a hazardous waste on-site without being required to comply with the "C" facility standards, which would amount to 26 tons of hazardous waste in place after 10 years. The Agency believes that the hazard posed by such a situation will generally be minimal because a generator discarding hazardous waste on-site must obtain prior state approval (as discussed in Section IV-F). It is unlikely that a state would approve such a facility unless an analysis of the intrinsic hazard of the waste and the potential for exposure indicated the hazard was minimal.

At an exclusion level of 1000 kg/mo, the average dilution ration is reduced to 200 to 1. Although there is no certainty that a dilution ratio of 100 to 1 or even 1000 to 1 presents adequate protection of human health, these levels of dilution are high and minimize exposure and risk.

E. Phasing

The Agency has concluded that a general exclusion level of 100 kg/mo would provide adequate protection of public health and the environment in most cases but that the exclusion level must be 1000 kg/mo initially because administrative resources are limited. Thus, initially, the 1000 kg/mo exclusion level provides the best protection possible by allowing limited Agency and state resources to be focused on implementing and enforcing controls on large generators, transporters, and waste management facilities.

To more fully meet the environmental protection objectives of RCRA, however, the Agency will initiate rulemaking within two to five years to phase in expanded Subtitle C coverage of small generators down to those generating 100 kg/mo quantities. The Agency believes there is a reasonable expectation that the Agency and state resource shortfall will decrease over time as discussed below to allow for expanded coverage of those small generators without sacrificing full implementation and enforcement of Subtitle C controls on large quantities. The Agency does not believe it is reasonable to expect that resourses will be available in the foreseable future to fully regulate all generators.

Projecting workloads and budgets into the future is inherently speculative relying on various assumptions and estimates. The Agency's small generator economic impact

study projected that the Agency and state administrative shortfall at any generator exclusion level would increase over time although workload requirements were projected to decrease. The shortfall was projected to increase because administrative costs (primarily staff costs) were assumed to inflate over time while the Agency and state budgets remained constant. If, in fact, budgets keep pace with inflation, (and Subtitle C staffing is not reduced) then Subtitle C coverage can be expanded for additional small generators in 1983 when the Subtitle C program development activities are projected to be completed.

Another Agency economic analysis of the Subtitle C regulations, the ORIA (see Section IV-B), projected that the Agency and state Subtitle C workload would increase substantially from 1981 to 1983 and would then decrease somewhat in 1984 and 1985. The ORIA did not project budgets beyond 1981. If the Agency and state budgets keep pace with the resource needs projected by the ORIA and are not reduced in 1984 (and keep pace with inflation in 1984 and beyond), then under the ORIA's projections additional small generators can be brought under expanded Subtitle C coverage at that time.

In short, although these analyses used different assumptions and different methodologies, it is clear that under the scenarios described above Subtitle C coverage can be expanded over time for additional small generators without sacrificing full implementation and enforcement of the

Subtitle C controls on large generators, transporters, and waste management facilities. In addition, the Agency will seek any budgeting increases necessary to accomplish the appropriate phasing of expanded regulatory coverage.

Finally, once the regulatory system in place and operating, the Agency will be able to reasses the ability to achieve more comprehensive coverage. For example, several commenters have pointed out that the Agency and state budgets have been underestimated and the small generator administrative workload has been overstated by the Agency studies.

The Agency agrees that it may appear that the small generator administrative workload can be reduced at the Agency's discretion because nearly 80 percent of first year costs and 90 percent of recurring costs relate to inspection and enforcement which have a discretionary component. However, it is not clear that the actual administrative workload for non-discretionary actitities will be substantially less than the total workload projections in the Agency studies (See Table 4). The Agency and the states will be required to initiate inspections and enforcement actions where apparent non-compliance incidents are reported by others to the Agency and the states. Non-discretionary inspections and enforcement actions may increase as the small generator exemption cutoff is lowered because of the dramatic increase in the number of generators being regulated. Many of the small generators may not comply with the regulations simply because they are not aware of the regulations or they do not fully understand them. Table 3 shows some of the types

of industries that have large numbers of generators of less than 1000 kg/mo. Many of these generators are generally unfamilar with environmental regulation and may never become fully aware of the regulatory controls that are applicable to their wastes.

If the commenters are correct that workloads have been overstated and budgets understated, Subtitle C coverage of small generators can be expanded quickly and without directing resouces from other Subtitle C programs. Answers to these questions should be apparent in two or three years.

F. Analysis of Options for Regulating Excluded Generators

The Agency considered various combinations of reduced administrative and technical requirements for generators of less than 1000 kg/mo quantities.* Based on data presented in the Agency studies and analysis of comments from the public, the Agency concludes that these generators should be excluded from all of the Part 262 generator requirements except the hazardous waste determination requirement of §262.11. However, the excluded generators are required to manage their waste (except for on-site storage in small quantities) in state-sanctioned facilities or to ensure that their waste is transported off-site to a state-sanctioned facility.

The objective of the analysis of various requirements on excluded generators was to develop requirements that would provide adequate protection of public health and the environment from the hazards these wastes pose while minimizing the Agency and state administrative burden. The Agency did not want to create a resource shortfall in order to regulate small generators at the expense of full regulatory control of large generators, transporters, and waste management facilities.

As presented below the Agency's analysis of the Part 262 generator requirements (and other requirements the Agency

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* Two other approaches were considered and are analyzed in Appendix B: Unconditioned exemption from Subtitle C control of generators in states with regulatory programs approved by the Agency; and, assumption of duties contracts.

conceived that relate specifically to small generators) indicated that they were either likely to be ineffective or likely to create a substantial Agency and state workload. Although the Agency is not particularily comfortable with this conclusion with respect to generators of 100 kg/mo to 1000 kg/mo quantities because of the hazard they pose, the fact is that none of these requirements appeared to effectively address the potential hazards without increasing the administrative workload and, thus, defeating the purpose of the exclusion.

In summary, any requirement on exempted generators must effectively address the hazard posed, it must be self-implementable, and it must generally result in voluntary compliance.

Consideration of Part 262 Generator Requirements

The Agency analyzed the following generator requirements as they might be applied to exempted generators: notification under Section 3010 of the RCRA; the manifest, manifest exception report and annual report; and management of hazardous waste in an Interim Status facility or a permitted facility.

Notification Under Section 3010. The Section 3010 notification will be used to assign the generator an identification number and to enable the Agency and the states to effectively manage the flow of manifest exception reports and annual reports. These reports in turn, enable the Agency and the states to monitor generator actitities and to assist enforcement efforts. Because enforcement actions against small generators will have low priority given limited resources, the Section 3010 notification would have little value.

Even so, the Agency considered requiring notification of generators of between 100 kg/mo and 1000 kg/mo quantities to provide additional data for use in future rulemaking. However, the Agency concluded that the Section 3010 notification is not the most efficient tool for obtaining information on small generators. Only data on the number of generators and the type of waste they generate will be available from the notifications and not data that may be necessary for rulemaking such as quantities and specific characteristics (e.g., concentration and type of hazardous constitutents, physical properties, etc.) of each waste stream produced by a generator, collection and management practices, and the process or business that generated the waste. The Agency studies have already estimated numbers of generators and waste types, and thus, additional data like that discussed above would be of more value than a confirmation of the estimates already available that the Section 3010 notification could provide. If additional data is required for future rulemaking, it would be more efficient to survey representative samples of generators rather than to require all generators to provide data.

Manifest and Generator Reports. The manifest required under Part 262 is a tool for tracking the movement of a waste to ensure that it reaches its designation and for identifying its acute characteristics through the use of the Department of Transportation (DOT) shipping name. Although the manifest does provide basic information, it does not provide the type of waste characterization information that a waste management

facility operator needs to ensure safe management of the waste. Thus, the manifest system is principally a tracking system intended primarly for monitoring and enforcement purposes. Given limited resources, the Agency, and the states in most cases, may not have the resources to aggressively pursue enforcement actions against small generators. Because the manifest by itself did not promise greatly increased environmental protection, yet promised to greatly increase the Agency's enforcement responsibilities, the Agency decided not to require the manifest for small generators.

"C" Management. The Agency considered requiring excluded generators to dispose of their waste in permitted facilities or facilities in Interim Status (i.e., "C" facilities) even though the generator would not be required to notify under Section 3010 of the RCRA or to manifest his waste.

The requirement was considered initially for all excluded generators, and then for only those generating more than 100 kg/mo. The Agency concluded that requiring "C" management of the waste from any excluded generators could result in a substantial Agency and state administrative burden because of a substantial non-discretionary enforcement workload, and a substantial generator assistance workload.

The enforcement workload is somewhat non-discretionary because Section 3001 of RCRA requires that whenever the Agency learns that a person is in violation of Subtitle C, the Agency is required to notify the person. Given the cost of compliance and the types of generators (i.e., overwhelmingly non-manufac-

turing), many generators may not comply with this requirement either unitentionally or intentionally. When incidents of non-compliance are reported to the Agency and the states by others, the Agency and the states will undertake enforcement action even if this results in reducing implementation of other Subtitle C regulatory controls such as permitting waste management facilities.

Again, it appeared that, strictly from an environmental perspective, a requirement that wastes be delivered to a "C" facility without other requirements would not be effective. Merely delivering the waste to a "C" facility does not ensure proper management. The waste must be identified, analyzed, handled correctly and treated or disposed properly. The "C" facility operator has a number of responsibilities in handling hazardous waste, including conducting waste analyses, handling unmanifested wastes properly, and ensuring proper treatment, storage or disposal. Simply requiring delivery to "C" facility without requiring proper packaging, labelling, and shipping papers greatly increases the burden imposed on the operator of the facility. In practice, he may impose these types of requirements on the generator as a condition of accepting the waste.

Consideration of "D" Management of Excluded Wastes

The Agency's proposed small generator standard required that excluded waste be disposed in a facility certified by the state to meet the land disposal criteria the Agency was

to develop under Subtitle D of RCRA (a "D" facility).*

In the first years of the Subtitle C regulatory control program, however, there will be few facilities actually certified or permitted by the states as meeting the criteria of a "D" facility. In the absence of a "D" facility, small generator wastes would have to be managed in "C" facilities. Although this problem will be only temporary, it is expected that the states will require several years to permit all of their facilities.

Another drawback of this option is that the criteria developed at 40 CFR part 257 under Subtitle D relate only to land disposal. Thus, this option does not address management of small generator hazardous waste in non-"C" storage and treatment facilities. The Agency believes that non-"C" storage and treatment of small generator hazardous waste should not be precluded at the Federal level. For example, some municipal or industrial incinerators and resource recovery facilities may be able to effectively and safely manage ignitable wastes provided the operators are aware of the presence and the nature (i.e., comprehensive analysis) of the waste and are properly trained.

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* The Agency promulgated those criteria in September 1979 at 40 CFR Part 257.

Development of Controls for Excluded Waste

Management in State-Sanctioned Facilities. The Agency concludes that excluded waste may be managed in other than "C" facilities to minimize the Agency and state administrative burden. However, to ensure that the state is aware of the facility and has identified a responsible facility manager, the non-"C" facility must have a state permit, license, or registration.

Requiring excluded generators to manage their waste in state-sanctioned facilities under Subtitle C provides a much stronger deterent to indiscriminate dumping than is already provided by Subtitle D of the RCRA. Subtitle D prohibits open dumping of hazardous and other solid waste and provides for enforcement through State and citizen suits. However, Subtitle D does not provide for Agency enforcement and does not fix responsibility clearly on the generator. The §261.5 requirements for small quantity generators assigns responsibility on the generator and allows the Agency to take direct enforcement action when necessary.

The Agency intends for this regulatory approach to be a temporary expedient to requiring "D" management of disposed, excluded waste. When §261.5 is amended to phase in expanded Subtitle C coverage, the Agency will consider allowing non-"D" and non-"C" disposal of excluded waste only in states with approved solid waste plans. An approved plan indicates that the State is in the process of implementing Subtitle D of RCRA which prohibits open dumping and requires that open

dumps (i.e., non-"D" facilities) be identified. Given that state plans are not due to be submitted to the Agency until January 31, 1981 and the Agency has six months in which to approve or disapprove the plans, the Agency could not require approval of state plans at this time.

The Agency considered requiring that non-"C" facilities accepting excluded waste meet certain requirements of Parts 122 and 264 or 265. However, to do so the facility must be regulated under Subtitle C and the excluded waste must be identified so the operator can determine whether he is accepting an excluded waste and is, therefore, subject to the reduced facility requirements. This approach was not adopted because of the attendant Agency and state administrative burden it would have created.

The Agency is providing an exception to the requirement for management of exempted waste in a "C", "D" or state-sanctioned facility for wastes that are stored on-site in small quantities. Virtually all generators store some quantity of waste for short periods of time and few if any states currently permit or license such storage. Thus, requiring state-approval for storage would place a servere burden on both the states and the generators with little environmental impact justification provided that the quantity is limited. The Agency has concluded that the accumulation limits for certain extremely hazardous waste should range from 1 to 100 kilograms as defined in §261.5(c) and should be 1000 kilograms for the total quantity of hazardous wastes in storage.

If a generator accumulates quantities on-site in excess of these limits, the hazardous waste accumulated is no longer subject to exclusion under §261.5 and is fully regulated. Thus, the generator must immediately comply with §262.34 which requires marking and labeling of containers, limits accumulation time to 90 days (unless the facility is in interim status or has a permit) and requires that the waste be manifested and managed in a "C" facility when removed from storage.

Identification of Excluded Waste. The Agency considered three alternatives for identifying excluded waste to enable transporters and waste management facility operators to accept or reject an excluded hazardous waste:

1) container labeling;
2) special manifest; and
3) notification of transporters and facilities by the generator prior to use.

Indentification of excluded waste is desirable because of the acute hazards of handling ignitable, reactive and corrosive wastes and because non-"C" facilities are not designed to provide the degree of containment that "C" facilities provide.

These requirements were considered only for excluded generators who transported more than 100 kilograms per month for several reasons. The environmental damage reports did not indicate that quantities of less than 100 kilograms pose a hazard when disposed of in a managed facility. In fact, the Agency has no damage reports of less than 100 kilogram quantities disposed of in managed facilities. In addition,

the Agency and state administrative workload would likely have been substantial if any of these controls were applied to all excluded generators either because of non-compliance and the resultant non-discretionary enforcement workload, or because of generator requests for assistance.

The Agency considered subjecting excluded waste transported off-site to the labeling requirement of §262.31 but rejected the option. The Agency believed that, in most cases, the labeled containers would be mixed with other non-hazardous waste by the generator so that transporters would not know that the waste was present. This situation is exacerbated during collection so that the waste management facility operator would not know whether a labeled container was in a load of waste unless each container was examined. Thus, labeling without a shipping paper or manifest is not effective.

The Agency also considered requiring generators of 100 kg/mo to 1000 kg/mo quantities to accompany off-site shipments with a special manifest or shipping paper that provided more information than the Part 262 manifest for large generators. The Agency considered requiring that the EPA hazardous waste description be added to the DOT shipping name to provide transporters and waste management facility operators a more useful description of the waste. Even so, the EPA waste description would not be an adequate substitute for a comprehensive analysis when large quantities are being managed (i.e., 100-1000 kg).

Another problem with requiring the special manifest is that it makes little sense to manifest a waste without properly packaging and labeling the waste so it can be effectively managed. However, as discussed earlier, this may substantially increase the Agency and state administrative workload because of generator requests for assistance in interpreting the complex DOT regulations and the increase in non-discretionary enforcement resulting from increased numbers of generators.

Finally, to have generators communicate with transporters and waste management facilities, the Agency considered requiring generators to notify transporters and facilities prior to use of the types and quantities of waste they would be handling. This approach was rejected because the Agency was unable to devise a notification system that would ensure communication of the appropriate information without entailing significant administrative supervision or involvement. A one-time notification to transporters and management facilities might serve to forwarn these persons generally of the fact that they may handle hazardous waste, but this is information which if they are familar with the regulatory system, they may know. Such notification would not provide information on frequency, rates, and quantities. To require notification with each delivery (i.e., a shipping paper) has the problems which would attend use of the manifest. Moreover, the Agency assumes that many management facilities and transporters will, (or do) as a part of normal business practice, learn of the wastes they handle and adjust their management practices accordingly.

V. DISCUSSION OF FINAL REGULATION

Small quantity generators are excluded from full regulation under Part 262, except as indicated below, provided they discard (i.e., treat or dispose) their waste in, or ensure that their waste is delivered to, a Subtitle C permitted facility, a facility in Interim Status under Subtitle C, or a facility permitted, licensed or registered by a state to manage municipal or industrial solid waste. Small quantity generators are generators who produce in a calendar month a total of less than 1000 kilograms of hazardous wastes. However, if more than specified quantities (from 1 to 100 kg) of extremely hazardous wastes are generated in a calendar month by a small quantity generator, those particular wastes are fully regulated. In addition, if a small quantity generator accumulates on-site at any time more than 1000 kg of hazardous waste is total, or more than specified quantities (from 1 to 100 kg) of extremely hazardous waste, those wastes are fully regulated.

To determine if the 1000 kilogram limit is exceeded, a generator must aggregate all hazardous waste generated in a calendar month. Thus, small quantity waste streams produced by large quantity generators are fully regulated, even though those small quantities may pose a hazard similar to small generator waste in a specific management/exposure situation. The Agency is taking this position because to exempt small quantities produced by large generators ignores a major portion of the Agency's reasoning in providing a small generator

exclusion. The Agency is providing the exclusion because it is the most environmentally sound approach given the need to focus limited Agency and state administrative resources on large quantities. Large quantity generators will generally already be in the hazardous waste regulatory system and, thus, the administrative burden to the Agency and the states will not be reduced by excluding a portion of their wastes.

If a generator who produces hazardous waste on a continuous basis is not sure that he will exceed any of the generation limits in an up-coming calendar month, he may project the quantity expected to be generated in that month based on the average monthly quantities of hazardous waste generated in the three previous calendar months, or based on daily averages if he has not been a generator for three months. If the actual quantity generated proves to exceed the generation limit during the course of the month while the quantity projected indicated that the limit would not be exceeded, the generator is still an excluded generator. However, notwithstanding this method of projecting quantities, if the generator has reason to know that he will generate more than any of the limited quantities, or if an unplanned incident occurs which produces quantities greater than the limits, the waste generated for the remainder of that month is fully regulated. Examples of incidents are spills, fires, or floods.

The regulation language also allows a generator to be subject to full regulation one month and excluded the next. However, generators whose waste are frequently subject to regulation have the option of managing their waste under

Part 262 in all months.

All small quantity generators must comply with §262.11 which requires any generator of a solid waste to determine if his waste is hazardous. If the excluded generator's waste is hazardous, he must comply with §261.5.

Small quantity generators can determine whether a facility is permitted, licensed, or registered by the state, and thus eligible under §261.5 to accept their hazardous waste, by contacting the facility operator. In addition, the states are expected to develop lists of such facilities.

Small quantity generators can treat or dispose of their waste in municipal or industrial incinerators and in municipal solid waste resource recovery plants provided that the facility has a state permit, license or registration and provided, of course, that no state or local government regulation or ordinance and no contractural condition prohibits such management.

Finally, the regulation provides that a small quantity generator may mix his hazardous waste with non-hazardous waste in quantities that exceed the exclusion limits and remain an excluded generator, provided the resulting mixture does not meet the characteristics of hazard defined in Subpart C of Part 261. This is an exception to the Part 261 regulations granted only to small quantity generators. Large quantity generators who mix any listed hazardous waste with other materials must manage the mixture as a hazardous waste. The Agency believes that this exception is necessary to make the regulation practical and to most appropriately protect public

health. Without such a provision, generators would tend to segregate and accumulate their small quantity hazardous waste. This would increase their cost of storage and collection substantially without any enrivonmental benefit because separate collections would be required even though the waste could be taken to the same disposal facility. Furthermore, this could work against protection of public health since the mixing and dilution of excluded hazardous wastes with non-hazardous waste is in the Agency's view, less likely to cause harm than concentration and accumulation.

APPENDICES

Appendix A - Damage Incidents Involving Small Quantities of Hazardous Wastes

Appendix B - Summary of and Response to Public Comments on the Proposed Standard

Appendix C - Summary of and Response to Public Comments on the Agency Studies

APPENDIX A

Damage Incidents Involving Small Quantities of Hazardous Wastes

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A-1

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Arsenic-containing Pesticide, Perham, MN

(25Kg)

1. Personal Damage: Eleven persons developed arsenic poisoning. Two required hospitalization and treatment.

2. Environmental Damage: Contamination of the soil and groundwater.

3. Economic Damage: Discontinued usage of contaminated well. Installation of public water supply cost approximately $3,000. Removal and safe disposal of contaminated soil estimated at $25,000. No estimates available on medical costs, capping of wells and water analysis services.

4. Cause of Problem: Subsurface migration of arsenic compound from the burial site to well 20 feet away.

5. Type and Quantity of Hazardous Waste Involved: Grasshopper bait, consisting of arsenic trioxide, bran, sawdust, and molasses. Total quantity disposed estimated at less than 50 pounds.

6. Source of Waste: Local farmers

7. Date: Burial of grasshopper bait estimated between 1934 and 1936. First case of illness reported in May 1972, with other cases following during the next 10 weeks.

8. Location: EPA Region V, Perham, Minnesota

9. Remedial Action: The well has been capped. Cost considerations have prevented permanent correction of the situation at this time. Samples from 12 nearby wells analyzed at six-month intervals by the State Health Department.

10. Legal Action: None.

11. Miscellaneous: –

12. Source of Information: Hazardous Waste Disposal Damage Reports, EPA/530/SW-151, U.S. Environmental Protection Agency, 1975.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Trichloroethylene-Containing Degreasing Solvent, Wolcott, CT

1. Personal Damage: None reported (35Kg/mo)

2. Environmental Damage: Private well owned by Mr. C. J. Brennan, 17 River View Circle, Wolcott, CT contaminated with trichloroethylene, perchloroethylene, hydraulic fluid, gasoline and other chemicals.

3. Economic Damage: Well was subsequently closed and a new well dug. No estimates available on cost of closure of contaminated well or of digging new well.

4. Cause of Problem: Approximately 100-150 gallons/yr of trichloroethylene degreasing solvent were deposited on company-owned land located 200 yards from a private well over a period of 10 years. Also, during this period, unknown quantities of hydraulic fluid were piped into a nearly dry well and gasoline was poured down floor drains at a service station across the street from the private well. All 3 occurrences resulted in contamination of the nearby private well.

5. Type and Quantity of Hazardous Waste: 100-150 gallons/yr of trichloroethylene over a 10 year period; also, unknown quantities of hydraulic fluid and gasoline.

6. Source of Waste: Source of trichloroethylene solvent was Kras Tool and Machine Company of Wolcott, CT. Source of hydraulic fluid was A.D. Bauman Co. Source of gasoline was a Mobile Oil service station.

7. Date: Well contamination was detected during inspection by Connecticut Resources Commission on November 15, 1974.

8. Location: Contaminated well located at 17 River View Circle, Wolcott, CT

9. Remedial Action: Contaminated well was closed and new well dug. All sources of waste were forced to discontinue dumping of chemicals onto land, into pipes and floor drains. Floor drains at the Mobile service station were sealed off.

10. Legal Action: Homeowner sued all 3 companies involved for damages. Suit was recently settled out of court. No data available on litigation costs.

11. Miscellaneous: Just prior to the date of the incident, municipal sewers were installed into the area. Some fracturing of bedrock may have occurred during blasting operations involved in the sewer installation, which may have contributed to the contamination of the private well.

12. Source of Information: Telephone communication with Mr. D. Pizzuto, Hazardous Materials Management Unit, Department of Environmental Protection, State of Connecticut, February 1, 1980 (S. Quinlivan, TRW). Memo from E. Pizzuto, State Dept. of Environmental Protection, to R. L. Smith, State Dept. of Environmental Proection, 11/15/74. Letter from R. L. Smith, State Dept. of Environmental Protection, to D. E. Bottigliere, Cardinal Engineering Co., 1/31/75.

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HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Toxaphene, Effingham, IL
(100 Kg)

1. Personal Damage: None documented.

2. Environmental Damage: Contamination of public water supply reservoir serving city of Effingham, Illinois. Also, 5-6 fish killed.

3. Economic Damage: No estimate available on the cost of clean-up action taken by state authorities.

4. Cause of Problem: Employee cleaning up around State Highway Department garage dumped 30 gallons of excess Toxaphene into parking lot drain. Drain entered ditch which led to public water supply reservoir serving the city of Effingham, Illinois. Ditch contamined water supply on a rainy day.

5. Type and Quantity of Hazardous Waste: 30 gallons of unused (several years old) Toxaphene.

6. Source of Waste: Toxaphene used by State Highway Department for insect control along highways.

7. Date of Incident: 1966

8. Location: Effingham, Illinois

9. Remedial Action Taken: All contaminated gravel and soil in parking lot drain removed and disposed of properly. As a precaution, extra carbon was used in the water supply treatment facility. Contaminated ditch was dug out. Bioassay testing and monitoring for poisoning was conducted for 4 weeks. Maximum levels of toxaphene detected was 10 ppb.

10. Legal Action Taken: None.

11. Miscellaneous: –

12. Source of Information: Memo from Mr. Franklin Levis, Public Water Supply Division, Illinois EPA, Springfield, Illinois, July 15, 1975.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Trichloroethylene-Containing Degreasing Solvent, Oscoda, MI
(300 Kg/mo, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: Contamination of 8 residential wells and a spring located about 100 feet northest of the Thomson plant.

3. Economic Damage: Recommended extension of the Oscoda Township Municipal Water Supply system (1,000 feet north of affected area) to provide a safe water supply to contaminated area at an estimated cost of $140,000.

4. Cause of Problem: An auto parts manufacturing plant, Thomson Products, dumped trichloroethylene and discharged cooling water and parts rinse water containing trichloroethylene on the open ground which led to contamination of nearby wells.

5. Type and Quantity of hazardous Waste: Between 1968 and 1972 about 40,000 gallons of trichloroethylene dumped.

6. Source of Waste: Thomson Products-Hedblom Industries, Oscoda, Michigan.

7. Date: 1968-1972 dumping occurred; April 1973 staff of the Water Quality Division, Michigan Department of Natural Resources received a complaint regarding a contaminated well near the plant.

8. Location: Iosco County, Oscoda, Michigan

9. Remedial ActioN: Proposed water supply system extension from Oscoda Township to the affected area. Thomson company agreed to replace any private wells in the area proved to be contaminated.

10. Legal Action: None reported.

11. Miscellaneous: Concentrations of trichloroethylene in one well and spring were reported at 10 mg/l and 28 mg/l, respectively. Other wells showed trace quantities.

12. Source of Information: Memo from Andrew Hogarth, Michigan Department of Natural Resources, Water Quality Division, March 10, 1978, US EPA files. Telephone communication with Mr. George Liddle, District Engineer, Michigan Department of Nautral Resources, (517) 275-5151 (P. Painter, TRW 2/28/80).

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HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Mevinphos Pesticide, Waterloo, IA

(900 Kg, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: Contamination of soil surrounding a chemical plant.

3. Economic Damage: Cost of cleanup not reported.

4. Cause of Problem: Chemical manufacturing plant burned technical mevinphos and dumped previously packaged material.

5. Type and Quantity of Hazardous Waste: Approximately 2,000 pounds (908 kg) of packaged technical mevinphos (phosdrin).

6. Source of Waste: Chemical manufacturing company.

7. Date: 1972

8. Location: Waterloo, Iowa

9. Remedial Action: The area was neutralized with alkali and some materials were repackaged for disposal by a private hazardous waste disposal firm in Sheffield, Illinois.

10. Legal Action: None reported.

11. Miscellaneous:

12. Source: Appendix 1: Case Histories of Accidents, Illegal Disposals and Pollution Incidents Involving Hazardous Wastes, from the files of Calif. Dept. of Health Services, Hazardous Materials Management Section.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Paints and Solvents, Cornwells Heights, PA
(1700Kg, Estimated)

1. Personal Damage: Several families forced to abandon their homes due to fumes and fire danger.

2. Environmental Damage: None reported.

3. Economic Damage: No estimate supplied on possible costs incurred for families forced to evacuate their homes.

4. Cause of Problem: 500 gallons of paint and solvents dumped into sewer line by industrial waste disposal firm called Nugent Bros., Inc. located in Cornwells Heights, PA.

5. Type and Quantity of Hazardous Waste: Approximately 500 gallons of paints and solvents.

6. Source of Waste: Nugent Bros., Inc., an industrial waste disposal firm.

7. Date of Incident: 1978

8. Location: Cornwells Heights, PA area

9. Remedial Action Taken: Evacuation of families until danger had passed.

10. Legal Action Taken: Owner of Nugent Bros., Inc. (Mr. Gustav Propper, age 42), sentenced to 28.5 to 58.5 months in county prison by Bucs County Court for violation of the state's Clean Streams Law.

11. Miscellaneous: -

12. Source of Information: Mr. Mike Pelensky, U.S. EPA, Region III, Philadelphia, PA. Also, Chemical Week Report, March 1, 1976, p. 26 and April 26, 1976.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Trichloroethylene-Containing Sludges, Rehoboth, MA
(1700Kg, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: Contamination of private ground water wells with toluene, trichloroethylene and ethyl acetate.

3. Economic Damage: Cleanup of contaminated soil at the site between July 5-31, 1978 at a cost of $125,000.

4. Cause of Problem: Illegal dumping of chemical wastes, mainly oil derivatives and sludge from reprocessing solvents, onto a 30'x10' pocket located on private property. Ground water wells at disposal site and on adjacent property contaminated.

5. Type and Quantity of Hazardous Waste: Eight to ten 55-gallon drums deposited at the site. Heavy black sludge containing toluene, trichloroethylene, ethyl acetate and unknown substances covered the 30'x10' area.

6. Source of Waste: Illegal disposal of chemical wastes by a trucking company.

7. Date: Rehoboth Health Agent informed of dumping on April 6, 1978.

8. Location: Rehoboth, Massachusetts

9. Remedial Action: Site cleaned up under state supervision and wastes taken to "NEWCO." Area graded and seeded.

10. Legal Action: State is seeking reimbursement of cleanup costs from the owner in court. A $200,000 property damage suit has been filed.

11. Miscellaneous: Wastes dumped near Shad Factory Pond, a standby reservoir serving the Bristol, R.I. Water Company. Surface water contamination suspected but not proven.

12. Source of Information: Office of the Board of Health, Rehoboth, Mass. Report dated April 26, 1978 sent to Mass. Division of Water Pollution Control, Southeast Region. Oil and Hazardous Materials Section, U.S. EPA Region I, Trip Report May 11-12, 1978 - Silva Chemical Waste Disposal Problem, Rehoboth, Mass.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Alkaline Liquids, Mercer County, PA
(3500 Kg/mo, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: Five-mile fish kill in a local stream.

3. Economic Damage: Sewer line clogged by the wastes was unclogged at the expense of Sandy Lake Borough; expenses not reported.

4. Cause of Problem: Alkaline liquids dumped in swampy lowland on private land. When the landowner drained the swamp with a bulldozer, the wastes contaminated a nearby stream (resulting in a five-mile fish kill) and a clogged sewer line of Sandy Lake Borough.

5. Type and Quantity of Hazardous Waste: 20,000-30,000 gallons of highly alkaline liquids (caustic soda, soda ash) with alkalinity 8640 ppm and pH 10.6.

6. Source of Waste: Pittsburg Plate Glass Company of Sandy Lake Borough contracted with a private hauler who disposed of its wastes in the swampy lowland property.

7. Date: Wastes dumped between 1973 and 1975. On May 23, 1975 swamp was drained and resulted in a fish kill and clogging of the sewer line.

8. Location: Mercer County, Pennsylvania

9. Remedial Action: Clay wall built to re-impound the wastes not discharged to the stream. The sewer line was unclogged.

10. Legal Action: Property owner arrested for polluting public waters and fined $100.

11. Miscellaneous: -

12. Source of Information: Information obtained by A. Giles, Bureau of Water Quality Management, Meadville, PA from J. Schmick, Bureau of Water Quality Management and J. Ansell, Waterways Patrolman for Mercer Co.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Solvents Containing Trichloroethylene and Carbon Tetrachloride

Canton, CT (3500 Kg/mo, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: At least seven wells contaminated with carcinogenic chemicals.

3. Economic Damage: Estimates $125,000-$379,000 to bring public water supplies into the area where wells have been contaminated.

4. Cause of Problem: Chemicals dumped on open ground by a defunct chemical processing firm contaminated soil and groundwater.

5. Type and Quantity of Hazardous Waste: 800-1,000 55-gallon drums of chemicals containing trichloroethane, trichloroethylene, carbon tetrachloride and traces of chloroform, ethyl alcohol and isbutyl acetate.

6. Source of Waste: Chemicals dumped on property of Auto World Realty, Ltd. by a previous owner, John Swift Chemical Company

7. Date: Dumping occurred between 1969 and 1972.

8. Location: Canton, Connecticut at Rt. 44 and Colonial Road.

9. Remedial Action: State Dept. of Health to declare Canton's pollution an imminent threat to community health to obtain an HUD grant to bring public water into the area. State to sample marginal wells every 3 months for contamination.

10. Legal Action: State Department of Environmental Protection has ordered Auto World to investigate and clean up carcinogenic chemicals on its property.

11. Miscellaneous: Auto World filed an appeal contesting the Dept. of Environmental Protection's authority to order a landowner to do expensive cleanup to correct a condition he didn't create.

12. Source of Information: Telephone communication with Barry Giroux, Connecticut Department of Environmental Protection, Hazardous Materials Management Unit- (203) 566-5712 (P. Painter, TRW 2/28/80)

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HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Ethyl Acetate, Cook County, IL
(200 Kg, Estimated)

1. Personal Damage: Landfill operator died from second and third degree burns.

2. Environmental Damage: None resulting from the incident.

3. Economic Damage: Compacting machine valued at $100,000 was lost.

4. Cause of Problem: A scavenger hauler deposited a load containing two 55-gallon drums of ethyl acetate at the landfill in the dark hours of the morning. The first drum settled several feet into the fill; the second settled on the surface and was struck by the compactor.

5. Type and Quantity of Hazardous Waste: One 55-gallon drum of ethyl acetate.

6. Source of Waste: Industrial chemical wastes deposited at the landfill by a scavenger hauler.

7. Date: September 18, 1975

8. Location: Calumet Industrial Development Landfill, Cook County, Illinois

9. Remedial Action: None; the Illinois EPA has cleared Calumet Industrial Development of responsibility for the incident since the landfill has a supplemental permit for hazardous wastes.

10. Legal Action: Civil suit pending against the waste generator and/or hauler by the family of the deceased.

11. Miscellaneous: -

12. Source of Information: Illinois EPA, U.S. EPA files.

B-2

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Paint Solvent, Dakota County, MN

(200 Kg, Estimated)

1. Personal Damage: Landfill employee suffered burns over 85% of his body and was left lame; he required hospitalization for 4½ months and extensive plastic surgery.

2. Evnironmental Damage: None reported.

3. Economic Damage: Approximately $60,000 damage done to bulldozer. Hospital costs for landfill employee totalled $125,000.

4. Cause of Problem: Bulldozer operated by landfill employee crushed and ignited a container of paint solvent.

5. Type and Quantity of Hazardous Waste: One container of paint solvent.

6. Source of Waste: Waste generator was Standard Solvent Company; waste hauler was Twin Cities Disposal Company.

7. Date: March 4, 1969

8. Location: Burnsville, Minnesota

9. Remedial Action: Landfill employee was hospitalized for 4½ months.

10. Legal Action: Employee sued waste generator and hauler and recovered approximately 1/3 of personal damages.

11. Miscellaneous: -

12. Source of Information: Personal communication with Mr. J. Little, Division of Solid Waste, Minnesota Pollution Control Agency, Roseville, MN, February 1, 1980 (S. Quinlivan, TRW); Hazardous Waste Disposal Damage Report, U.S. EPA, EPA 530-SW-151, June 1975; Hazardous Waste Generation, Twin Cities Metropolitan Area, Barr Engineering Co., Minneapolis, MN, October 1973, p. B-2; Personal communication of Mr. Richard B. McGowan, 4748 Thomas Avenue, South Minneapolis, MN.

B-3

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Ignitable Waste, Edison Township, NJ
(200 Kg, Estimated)

1. Personal Damage: Bulldozer operator killed in explosion at landfill.

2. Environmental Damage: None which resulted from indicent.

3. Economic Damage: Bulldozer destroyed (approximately $91,000).

4. Cause of Problem: While burying and compacting 55-gallon drums of unidentified industrial waste chemicals, an explosion occurred followed by additional explosion(s) and fire.

5. Type and Quantity of Hazardous Waste: From one to five 55-gallon drums of unidentified industrial chemicals.

6. Source of Waste: Unknown industrial origin.

7. Date: October 11, 1974

8. Location: EPA Region II, New Jersey, Edison Township, Kin-Buc Landfill

9. Remedial Action: Management has agreed to make efforts to keep out unknown chemical wastes.

10. Legal Action: OSHA issued six citations (covering 36 items) for violation of the Occupational Safety and Health Act of 1970. On March 4, 1975 a formal settlement of contested items was reached between OSHA and the management.

11. Miscellaneous: During the first 10 months of 1974, six other chemical waste disposal-related occupational injuries were recorded in the logs of Kin-Buc Landfill.

12. Source of Information: Hazardous Waste Disposal Damage Reports EPA/530/SW-151, U.S. Environmental Protection Agency, 1975.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Lacquer Thinner, Southern California
(200 Kg, Estimated)

1. Personal Damage: Driver of a truck disposing of flammable wastes was seriously burned when flames erupted from the disposal area and engulfed the rear of the truck.

2. Environmental Damage: The truck was destroyed and several nearby trucks were damaged by the fire.

3. Economic Damage: Cost of damage to the trucks not reported.

4. Cause of Problem: the actual cause of the fire is unknown. It may have been the result of a chemical reaction of the wastes with the refuse in the landfill or it may have resulted from a spark created during the handling of the drums.

5. Type and Quantity of Hazardous Waste: 55-gallon drums of waste lacquer thinner.

6. Source of Waste: Not reported.

7. Date: 1971

8. Location: Southern California.

9. Remedial Action: None reported.

10. Legal Action: None reported.

11. Miscellaneous: Drums were labelled as "Mud and Water," later verified to be waste lacquer thinner.

12. Source of Information: Appendix 1: Case Histories of Accidents, Illegal Disposals and Pollution Incidents Involving Hazardous Wastes, from the files of Calif. Dept. of Health Services, Hazardous Materials Management Section.

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HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Ignitable Waste, Delaware County, PA
(200 Kg, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: Fire resulting from explosion of a drum of chemical waste burned trash and demolition wastes in an open dump. Chemicals from firefighting activities leached into nearby creek.

3. Economic Damage: Bulldozer used in compacting operations at the dump was destroyed; cost not reported. Cost of firefighting activities not reported.

4. Cause of Problem: Chemical wastes in a drum hit by a bulldozer during compacting operations exploded, causing a fire which spread throughout the dump.

5. Type and Quantity of Hazardous Waste: 55-gallon drum of unknown chemical waste.

6. Source of Waste: Unknown

7. Date: 1972

8. Location: Mayer dump, Delaware County, PA

9. Remedial Action: Attempts to extinguish fire by covering it. Fire smoldered until sometime in 1973 before it was extinguished.

10. Legal Action: Litigation had occurred since 1970 or 1971 to force dump to adhere to proper disposal practices. In 1974 there was more litigation requiring dump to make corrections in their disposal practices. Dump did not comply and was closed in 1974.

11. Miscellaneous: There was a fish kill in Crum Creek next to the dump in 1973 but it was not associated with the fire. Fish kill was a result of an oil spill at the site.

12. Source of Information: Telephone communication to Mr. Wayne Lynn, Environmental Resources Division, Bureau of Solid Waste Management, State of Pennsylvania, February 14, 1980 (P. Painter, TRW). Also, memo from Mr. Wayne Lynn, August 14, 1975.

B-6

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Corrosive Waste, York County, PA

(200 Kg, Estimated)

1. Personal Damage: Inspector from the Pennsylvania Department of Environmental Resources was splashed by the contents of a drum containing corrosives as it was compacted by a bulldozer operator. He was burned on the face and neck by the content.

2. Environmental Damage: None resulting from the incident.

3. Economic Damage: None reported on the medical costs incurred by the inspector.

4. Cause of Problem: While investigating disposal of industrial waste in a landfill not authorized to accept industrial wastes, an inspector was splashed by the contents of a drum as it was compacted by a bulldozer operator.

5. Type and Quantity of Hazardous Waste: Disposal records indicated that 1300 pounds of an unspecified corrosive had been delivered in two or three improperly labelled drums. Damage was caused by one drum.

6. Source of Waste: Penn State Aluminum of Wellsville delivered waste to Sunny Farm Landfill.

7. Date: Spring 1975

8. Location: Sunny Farm Landfill, North Cordorus Township, York County, Pennsylvania

9. Remedial Action: None reported.

10. Legal Action: Pennsylvania Department of Environmental Resources filed a complaint with the local magistrate against Penn State Aluminum of Wellsville for delivering improperly labeled hazardous materials and against Sunny Farm Landfill for accepting materials they were not authorized to handle.

11. Miscellaneous: -

12. Sources of Information: Telephone communication record: Ed Simmons of EPA Region III Office (May 12, 1975), in EPA files.

B-8

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Titanium Trichloride, Mundelein, IL

(200 Kg)

1. Personal Damage: Fourteen people (including policemen, firemen, local citizens, etc) were hospitalized for exposure to fumes. Calligan & Co., a local firm, was temporarily evacuated during the incident.

2. Environmental Damage: Four 55-gallon drums of neutralized titanium trichloride waste were trucked to a nearly vacant lot and buried. There is current interest in excavating and relocating the waste to insure environmental safety.

3. Economic Damage: Some costs incurred by IML Trucking Co. to neutralize and bury 4 drums of titanium trichloride. No estimate of costs available.

4. Cause of Problem: One of four drums being hauled by truck driver, Mr. George Spato of IML Trucking Co., leaked titanium trichloride as the truck was being driven down Route 45 in the town of Mundelein, IL.

5. Type and Quantity of Hazardous Waste: Approximately four 44-gallon drums (220 gallons) of titanium trichloride, which forms hydrochloric acid mist on contact with moisture in the air.

6. Source of Waste: Chemical was being hauled by IML Trucking Co. to the Anchor Hocking Co. in Mundelein, IL.

7. Date: May 2, 1974, 10:40 am

8. Location: Route 45, within the city limits of Mundelein, IL.

9. Remedial Action: Truck was driven to a nearby fire station in Mundelein where it was washed down with water. Truck was then taken to a nearby grassy vacant lot where the 4 drums of titanium trichloride were removed, neutalized with lime and soda ash, and buried using a front-end loader.

10. Legal Action: None reported.

11. Miscellaneous: According to IEPA, Mr. Chuck Manson of Region V EPA is currently investigating the incident and may wish to excavate and relocate the neutralized chemical.

12. Source of Information: Telephone communication with Mr. J. Langley, Division of Land and Noise Pollution Control, Illinois Environmental Protection Agency, Springfield, Illinois, January 31, 1980 (S. Quinlivan, TRW).

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Paint Thinner, Cincinnati, Ohio
(1000 Kg, Estimated)

1. Personal Damage: Employee (Mr. William Smith, 44) of privately owned solid waste disposal dump was burned over 50% of his body and subsequently hospitalized.

2. Environmental Damage: None reported.

3. Economic Damage: No estimates supplied on cost of fire fighting, medical expenses and legal expenditures.

4. Cause of Problem: Employee was burned when his bulldozer ignited drums of toluene paint thinner which were illegally mixed in with solid waste.

5. Type and Quantity of Hazardous Waste: Approximately four 55-gallon drums of toluene paint thinner.

6. Source of Waste: Clopay Corporation (the waste generator) and Sidney Kohn & Co. (small holding company), of Cincinnati, Ohio

7. Date: June 11, 1976, 4:15 pm

8. Location: Elda, Inc. dump
   (subsidiary of Waste Management, Inc.)
   5701 Este Avenue
   Winton Place, Ohio

9. Remedial Action: Firemen were called to the scene of the fire and had to run hoses 1/2 mile because the dump had no hydrants. After the incident, workers at Elda Inc. dump refused to work until rigorous inspection procedures on incoming waste loads were implemented. Protective enclosures were installed on heavy equipment to increase worker safety.

10. Legal Action: A court suit was brought by the injured employee against Clopay Corporation and Sidney Kohn & Co. A monetary settlement was reached close to the trial date.

11. Miscellaneous: –

12. Source of Information: Telephone communication to Mr. Joseph Moore, Office of Land Pollution Control, Ohio Environmental Protection Agency, Cincinnati, Ohio, January 31, 1980 (S. Quinlivan, TRW) and telephone communication to Mr. Daniel Owings, law firm of White, Getgey and Meyer, Cincinnati, Ohio, January 31, 1980 (S. Quinlivan, TRW). Also, memo of Mr. Norm Schomaker, U.S. EPA, Office of Solid Waste, Cincinnati, Ohio, to Mr. Emery Lazar, U.S. EPA, Washington, D.C., and article in the Cincinnati Post Enquirer, June 12, 1976.

B-10

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Flammable Waste, Michigan
(1000 Kg, Estimated)

1. Personal Damage: Bulldozer operator experienced dizziness and eye irritation while burying drums containing unknown waste and soon left his bulldozer.

2. Environmental Damage: None reported.

3. Economic Damage: Bulldozer destroyed by fire after operator left the machine.

4. Cause of Problem: Drums of volatile flammable substances ingnited.

5. Type and Quantity of Hazardous Waste: volatile flammable wastes of unknown quantity.

6. Source of Waste: Not reported.

7. Date: Not reported.

8. Location: Michigan landfill.

9. Remedial Action: None reported.

10. Legal Action: None reported.

11. Miscellaneous: -

12. Draft Environmental Impact Statement, Appendices, Prepared by Office of Solid Waste, U.S. EPA, January 1979.

B-11

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

PBB-Containing Waste, Gratiot County, MI

(3200 Kg/mo, Estimated)

1. Personal Damage: None documented.

2. Environmental Damage: Contamination of soil, surface water and groundwater at a county landfill with PBB (polybrominated biphenyls) dumped illegally and improperly.

3. Economic Damage: Containment measures (capping and diking the landfill) at estimated cost of $3.15 million with additional monitoring and maintenance costs of $85,000 - $114,000.

4. Cause of Problem: PBB dumped in the landfill seeped through a natural clay layer into groundwater beneath the dump. A second clay layer remained intact so PBB had not yet reached the lower groundwater aquifer used for drinking water.

5. Type and Quantity of Hazardous Waste: 80-90 tons of PBB.

6. Source of Waste: Michigan Chemical Company dumped PBB wastes in landfill.

7. Date: 1971-1973

8. Location: Gratiot County Landfill, St. Louis, Michigan

9. Remedial Action: Michigan Dept. of Natural Resources has capped and diked the landfill to prevent contamination of drinking water.

10. Legal Action: Landfill closed December 1, 1977 by court order. The former Michigan Chemical Company, now Velsicol Chemical Company ceased operation at the plant site.

11. Miscellaneous: The plant site, also heavily contaminated with PBB wastes, is currently being decontaminated and secured under the auspices of the Michigan Dept. of Natural Resources.

12. Source of Information: Lansing, MI State Journal, 7-27-78,8-3-79; interoffice communication from B. P. Shah to F. B. Kellow, Resource Recovery Division, Michigan Department of Natural Resources. Telephone conversation with Mr. T. Rohr, Environmental Protection Division, Michigan Dept. of Natural Resources, 2/28/80 (S. Quinlivan, TRW).

B-12

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Organic Liquids, Haywood County, NC
(3400 Kg)

1. Personal Damage: None reported.

2. Environmental Damage: Contamination of stream waters and subsequent poisoning of cattle. Three cattle killed.

3. Economic Damage: Compensation for killed cattle and cost of surface skimming flowed over the top of a dike and into a tributary of Hominy Creek which served as a water source for cattle.

5. Type and Quantity of Hazardous Waste: Approximately 1,000 gallons of petroleum-based cleaning fluids.

6. Source of Waste: Textile-dyeing company in Arden, North Carolina sold approximately 20 barrels of the fluid to a private citizen for resale of the barrels. The fluid was poured onto a Haywood County landfill.

7. Date: Early 1974

8. Location: Haywood County, North Carolina

9. Remedial Action: Stream waters decontaminated by surface skimming; cattle owner compensated for his losses.

10. Legal Action: None reported.

11. Miscellaneous: —

12. Source of Information: Memo in U.S. EPA files.

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Chemical Liquids, Haywood County, TN
(4500 Kg, Estimated)

1. Personal Damage: None reported.

2. Environmental Damage: Contamination of a stream with concentrated dyes and other chemical liquids.

3. Economic Damage: Three cows fatally poisoned and many others rendered ill after drinking contaminated water.

4. Cause of Problem: Toxic liquids illegally dumped in a landfill were washed into a stream.

5. Type and Quantity of Hazardous Waste: 24 drums of concentrated dyes and other chemical liquids.

6. Source of Waste: Not reported.

7. Date: Not reported.

8. Location: Haywood County, TN

9. Remedial Action: None reported.

10. Legal Action: None reported.

11. Miscellaneous: —

12. Source of Information: Subtitle C, Resource Conservation and Recovery Act of 1976, Draft Environmental Impact Statement Appendices prepared by Office of Solid Waste, U.S. EPA, January 1979.

C-1

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Parathion Container McAdoo, TX

1. Personal Damage: Man died of respiratory paralysis after inhaling parathion.

2. Environmental Damage: None reported.

3. Economic Damage: None reported.

4. Cause of Problem: Mr. McWilliams used an acetylene torch to cut the top off a barrel which formerly contained concentrated parathion. He experienced dizziness, loss of sight and died soon after.

5. Type and Quantity of Hazardous Waste: One barrel formerly containing parathion (Red Barn Parthion 4).

6. Source of Waste: Improperly disposed barrel from unknown source.

7. Date: October 14, 1968

8. Location: McAdoo, Texas

9. Remedial Action: None reported.

10. Legal Action: None reported.

11. Miscellaneous: Label directions on the barrel instructed that the drum not be reused.

12. Source of Information: Memo, EPA files, Office of Pesticide Program #68-144.

C-2

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Parathion Container Dunning, NB

1. Personal Damage: Child died playing in a 55-gallon drum containing pesticide.

2. Environmental Damage: None reported.

3. Economic Damage: None reported.

4. Cause of Problem: Farmer cut the top off a 55-gallon drum which had contained pesticide and filled it with water to use as a swimming pool for his children

5. Type and Quantity of Hazardous Waste: One 55-gallon drum containing pesticide, parathion.

6. Source of Waste: Pesticide purchased for agricultural use.

7. Date: June 1968

8. Location: Dunning, Nebraska

9. Remedial Action: None reported.

10. Legal Action: None reported.

11. Miscellaneous: -

12. Source of Information: Telephone communication to Mr. John Wicklin, Chief of Pesticide Branch, Environmental Protection Agency Region VII (P. Painter, TRW 2/14/80).

C-3

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Pesticide Container Halifax County, NC

1. Personal Damage: A seven year old femal experienced nausea and vomiting, lost the ability to walk, complained of difficulty seeing, and became progressively unresponsive. She was admitted the following day to a Halifax County, North Carolina hospital and was determined to be suffering from organic phosphate poisoning. She rapidly responded to treatment and recovered completely.

2. Environmental Damage: None reported.

3. Economic Damage: No estimate supplied on costs of hospitalization of victim.

4. Cause of Problem: The girl had been playing with a 5-gallon drum of Daphnid pesticide which was collecting rainwater in the backyard of her home. Neighborhood children reported that she had filled a plastic spray bottle with the contamined rainwater and sprayed some of it into her mouth while making mud pies.

5. Type and Quantity of Hazardous Waste: One discarded 5-gallon container of Daphnid, an organic phosphate pesticide.

6. Source of Waste: Pesticide purchased for home use.

7. Date: 1974

8. Location: A rural section of Halifax County, North Carolina

9. Remedial Action: The discarded pesticide container was removed from the backyard of the girl's home.

10. Legal Action: None reported.

11. Miscellaneous: -

12. Source of Information: Telephone communication to Mr. Bill Williams, Solid Waste and Vector Control, Department of Human Resources and Division of Health Services, State of North Carolina, Raleigh, No. Carolina, February 1, 1980 (S. Quinlivan, TRW). S. Gelback and W. Williams, "Pesticide Containers: Their Contribution to Poisoning," Archives of Environmental Health, Vol. 30, January 1975, p. 49-50.

C-4

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET

Pesticide Container Moore County, NC

1. Personal Damage: Two brothers, aged one and two years, were hospitalized for a sudden onset of vomiting, diarrhea and difficult breathing due to organic phosphate poisoning.

2. Environmental Damage: None reported.

3. Economic Damage: No estimate supplied on costs of hospitalization of victim.

4. Cause of Problem: The two boys had been jumping in and out of an abandoned 55-gallon drum containing residual Disyston, an organophosphate pesticide. Sufficient residue remained in the drum to cause poisoning by dermal absorption.

5. Type and Quantity of Hazardous Waste: One discarded, nearly empty 55-gallon drum of Disyston, an organophosphate pesticide.

6. Source of Waste: One Disyston pesticide had been formulated by Chem-Agro Chemical Co.

7. Date: 1974

8. Location: Home located in Moore County near Southern Pines, No. Carolina

9. Remedial Action: None reported.

10. Legal Action: None reported.

11. Miscellaneous: -

12. Source: Telephone communication to Mr. Bill Williams, Solid Waste and Vector Control, Dept. of Human Resources and Division of Health Services, State of North Carolina, Raleight, North Carolina, February 1, 1980 (to S. Quinlivan, TRW). Also, S. Gelback and W. Williams, "Pesticide Containers: Their Contribution to Poisoning," Archives of Environmental Health, Vol. 30, January 1975, p. 49-50.

C-5

HAZARDOUS WASTE DISPOSAL DAMAGE INCIDENT SUMMARY SHEET
Parathion Containers, Hughes, AR

1. Personal Damage: A 2½-year old boy was hospitalized for organophosphate poisoning after playing among some empty drums containing pesticides.

2. Environmental Damage: Slight soil contamination of the area where the drums were stored.

3. Economic Damage: Cost of hospitalization and cleanup of contaminated area not reported.

4. Cause of Problem: City mayor obtained drums from an aerial applicator to serve as trash containers for the city. Drums were stored on city property and child played among them.

5. Type and Quantity of Hazardous Waste: Ethyl and methyl parathion left in drums.

6. Source of Waste: Empty drums from aerial applicator.

7. Date: July 3, 1972

8. Location: Hughes, Arkansas

9. Remedial Action: Drums decontaminated with caustic soda and buried. Soil where drums stored decontaminated with lime.

10. Legal Action: None

11. Miscellaneous: —

12. Source of Information: Telephone communication to Mr. M. L. Anderson, Chief of Pesticide Section, EPA Region VI (P. Painter 2/7/80)

APPENDIX B

Summary of and Response to Public Comments on the Proposed Standard

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APPENDIX B

Summary and Response to Public Comments
on Proposed Standard

A. Alternative Bases for the Exclusion Level

Summary of Comments

1. The exemption cutoff should be based on the number of employees in a facility.

2. The exemption cutoff should be based on the number of drums of waste filled per month.

Analysis and Response to Comments

The Agency has decided not to adopt either approach. The commenters did not indicate why these approaches may be better than those offered by the Agency in the preamble to the proposed regulations and discussed here. Using the number of employees to set the cutoff would not relate the regulation to environmental impact because the Agency studies showed that number of employees could not be correlated to waste generation. Thus, a facility with 3 employees producing 1500 kg/mo may not be fully regulated while a facility with 50 employees producing 75 kg/mo may be regulated. This would not result in adequate protection of health and the environment.

The other approach relating cutoff to number of drums filled per month appears similar to the aproach adopted. The primary difference appears to be an issue of volume versus weight in determining quantity. The Agency has used a weight based cutoff primarily because it is generally

easier to measure and is more indicative of the hazard posed.

B. Requirements for Excluded Waste

Summary of Comments

1. Some commenters proposed to unconditionally exempt small generators from Subtitle C regulation in states with Agency-approved regulatory programs for those generators because the states know local conditions (e.g., waste management problems, types of waste produced, and generator economics) and can administer the program more efficiently. Other commenters said that the states cannot be expected to implement programs that are more stringent than the Agency's, and deferring regulation of hazardous wastes to states is counter to legislative intent and may result in court challenges.

2. Allow exempted generators to enter into assumption of duties contracts because this will relieve the generator's cost burden without severely reducing protection of health and the environment.

Analysis of and Response to Comments

1. The Agency believes that an unconditioned exemption under Subtitle C where states implement hazardous waste or Subtitle D control programs would not provide adequate protection of health and the environment. The small generator requirements under §261.5 enable the Agency to take enforcement action against gene-

rators that indiscriminately dump hazardous waste or whose waste is indiscriminately dumped. Without this requirement exempted generators could not generally be made responsible under RCRA to ensure their waste was not indiscriminately dumped and the Agency could not initiate enforcement action against any party responsible for indiscriminate dumping. (Under Subtitle D, states and citizens, not the Agency, can initiate civil actions against open dumping.) In addition, notwithstanding the small generator requirement under §261.5, the states can implement more stringent standards for small quantity generators. Some states already regulate small generators more stringently than §261.5.

2. Generators, large or small, can enter into contracts with others whereby any Subtitle C responsibilities can be assigned to a third party without the express approval of the Agency. However, the generator is not relieved of his responsibilities, as between the Agency and the generator. If the Agency expressly relieved exempted generators of liability provided that they assigned their responsibilities to transporters, the Agency and the states could still incur a substantial administrative burden. If the exempted waste were required to be manifested, packaged, labeled and managed in a "C" facility, many generators could be expected to request assistance in interpreting the

DOT shipping regulations because the generator must still properly package and label the waste. In addition, the generator cost of "C" management could still be expected to be substantial, although some savings in waste analysis costs may be realized if transporters pool similar waste from several generators.

Even if the excluded waste was allowed to be managed in non-"C" facilities, the generator assistance cost could be substantial.

C. Phasing

Summary of Comments

1. Phasing allows time for the expansion of "C" facility capacity.
2. Phasing provides the Agency time to collect data on small generators to determine the most appropriate regulatory approach.

Analysis of and Response to Comments

1. Small generators do not substantially exacerbate the "C" capacity shortfall in those areas where there is a shortfall because all generators of less than 1000 kg/mo generate only one percent of the total quantity of hazardous waste. Thus, the Agency has not used this argument to support phasing.
2. The Agency is not phasing the exemption level specifically to allow the Agency time to obtain sufficient data to determine what regulatory controls should be

applied to small generators. The Agency studies provide adequate data to enable the Agency to adopt the regulatory approach presented here. However, given that phasing is necessary because of limited administrative resources, the Agency will consider any new information available on small generator waste and waste management practices in developing expanded Subtitle C coverage of small generators.

D. Exclusion of Groups of Generators

Summary of Comments

1. Retailers should not be given a blanket exemption as proposed in §250.29, because their waste can be extremely hazardous. Retailers should be regulated like any other generator.

2. The Agency should set high exemption cutoffs (e.g., 1000 kg/mo) for certain generators such as universities, pesticide applicators, hospitals, utilities, and bulk liquid storage facilities.

Analysis of and Response to Comments

1. The Agency agrees that retailers should not be exempted from Subtitle C regulation because they can generate extremely hazardous waste. For example, drug or hardware stores can dispose of damaged containers of substances listed in §261.33. Accordingly, the definition of retailer in the proposed rules has been deleted. The Agency studies on environmental and economic impacts did not consider wastes from

retailers because the Agency believes that establishments that engage solely in retailing generate hazardous waste infrequently, and then, only in very small quantities.

2. These groups of generators felt they should be excluded from regulation at high exclusion levels (e.g., 1000 kg/mo) for various reasons including: generator cost would be high; their waste is currently managed properly; and, it would be a hassle to keep track of small quantities generated from several sources (e.g., universities indicated that their waste quantity is difficult to measure because many buildings generate small quantities and the quantities fluctuate by research project).

As indicated previously, the RCRA does not allow the Agency to consider generator cost or hassle in developing or supporting the regulations. In addition, the RCRA does not allow the Agency to consider current management as the sole factor in determining whether a waste is hazardous, and thus, subject to Subtitle C control. If a waste may pose substantial hazard under plausible mismanagement scenarios, it must be regulated under Subtitle C.

E. Measurement of Waste Quantity

Summary of Comments

1. The rate of waste generation should be based on the average monthly quantity produced over 12 months

rather than monthly quantites.

2. Generators with several waste streams will have difficulty measuring total quantites.

3. Recordkeeping costs will be substantial to document non-generator status based on the quantity exemption.

Analysis of and Response to Comments

1. The Agency concludes that the rate of waste generation should be based on the quantity produced in a monthly period to minimize the health and the environmental damage that could result under the approach of using the average monthly quantities. Under the averaging approach, establishments generating wastes on a seasonal basis could conceivably produce 12,000 Kg in any given month and no waste during the rest of the year and be excluded from regulation. Quantites of this magnitude are more likely to result in damage than the 1,000 Kg limitation provided by the monthly quantity approach.

2. While some generators with several waste streams may have difficulty measuring total waste quantity, this hassle is unavoidable in order to assure protection of health and the environment.

3. The Agency recognizes that small generators may feel compelled to keep records to document that waste quantities were below the exemption levels. However, this cost is minor relative to the cost of the option of full regulation. The Agency cannot think of an

approach that would relieve small generators of this burden, and none was offered by the commenters.

F. Testing Costs

Summary of Comments:

The high testing costs to small generators to determine whether their waste is hazardous may result in some non-hazardous waste being declared hazardous to avoid those costs.

Analysis of and Response to Comments:

The projected cost to generators of less than 1000 kg/mo for testing to determine whether their waste is hazardous is approximately $455, other one-time costs amount to $90, and the recurring cost of compliance with Part 262 ranges from $848-$1606. Thus, generators above the exemption level are not likely to assume their waste is hazardous when a $455 investment may save $800-$1600 annually.

For generators beneath the exemption level, the commenter has a point because §262.11 requires any generator of solid waste, whether large or small, to determine whether his waste is hazardous. However, if an exempted generator declares that his waste is hazardous to avoid the testing costs when in fact it is not, the §261.5 requirements on the generator will generally have little or no economic impact on the generator. This is because the only effect of those requirements is to place responsibility on the small generator to ensure that his hazardous waste is not

indiscriminately dumped. This should have no economic impact on most generators because Section 4005(c) of Subtitle D of the RCRA already prohibits "any solid waste management practice or disposal of solid waste or hazardous waste which constitutes the open dumping of solid waste or hazardous waste". [Emphasis added]

A small generator's cost may increase in some situations such as:

- where excluded hazardous waste is banned from state-approved facilities
- where states regulate excluded waste more stringently than §261.5
- where a generator currently discards his waste on-site in a facility that is not state-approved and the state cannot or does not approve the facility
- where a generator currently stores, treats or disposes his waste off-site in a facility that is not state-approved.

In these situations, excluded generators may determine that it is cost-effective to test their waste to determine if it is actually hazardous rather than assuming it is and incurring the higher cost of management.

Moreover, the Agency believes that many generators will know whether their waste is hazardous because it is listed or because they know, for example, its pH or flash point, and, thus, know whether it meets the hazard characteristics. For some generators, the determination could

be made at minimal cost to them by having trade associations conduct tests that are applicable to most wastes produced by its members.

G. Miscellaneous Suggestions for Minimizing Small Generator Costs

Summary of Comments:

1. Extend the accumulation time restriction beyond 90 days for small generators before a permit is required.
2. Exempt on-site neutralization of small generator wastes from the facility standards and permit requirements.
3. The Agency should consider waste pooling strategies.
4. The Agency should investigate the opportunity for recycling of laboratory chemicals by the original supplies.

Analysis of and Response to Comments:

1. Extending the §262.34 accumulation time restriction beyond 90 days for small generators while requiring compliance with the other Part 262 requirements would enable generators to reduce some costs (e.g., manifests, collection, sample testing) and would result in fewer waste transporter trips and, thus, fewer spills. However, this waiver alone would not reduce the major costs to generators (i.e., recurring comprehensive testing), and the major small generator administrative costs to the Agency and the states (i.e., enforcement and assistance).

The Agency does not believe that the accumulation time should be extended for any subset of generators above the exemption cutoff (i.e., medium size generators) because improper storage can pose as great a hazard as improper treatment or disposal.

2. The neutralization or other treatment of waste produced by exempted generators is regulated only under §261.5 which requires that the exempted generator treat his waste in, or ensure delivery to, a state-sanctioned facility.

The Agency believes that the neutralization of large generator wastes must be fully regulated under Subtitle C, as discussed in the background document supporting the waste management facility standards on Tanks (Part 265, Subpart J).

3. The pooling of small generator wastes by transporters or facilities is not restricted by §261.5 except that the facility must have a state permit, license or registration to manage municipal or industrial solid waste.

The pooling of large generator wastes is not restricted except that transporters and facilities are regulated under Parts 263 and 264 or 265, respectively.

4. The recycling of unused or reusable chemicals back to suppliers is strongly encouraged by the Agency. Part 261 exempts facilities that recycle or reuse hazardous

waste from Part 265 regulation. Thus the cost of managing a hazardous waste can be reduced by recycling.

H. Wording Changes

Summary of Comments:

Several commenters suggested word changes to clarify the proposed regulation (§250.29).

Analysis of and Response to Comments

The suggested changes in wording are not relevant because of the changes in the regulation.

APPENDIX C

Summary of and Response to Public Comments on the Agency Studies

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APPENDIX C

Summary of and Response to Public Comments on the Agency Studies

A. Environmental impacts of discarding small generator wastes in "D" facilities.

Summary of Comments:

The studies did not adequately address the impacts of discarding exempted hazardous waste "D" facilities in that:

1) Explosions have had a disastrous impact on municipal waste resource recovery plants,
2) Fires at municipal landfills have occurred because of hazardous waste disposal,
3) Co-disposal of hazardous and un-hazardous wastes is inadequately addressed because some states won't permit a 1-to-100 dilution ratio.
4) Co-disposal would not present a safety hazard if containers properly were labeled and operator training procedures were implemented.
5) "D" facility operators need to have avance notice of delivery and discretionary power to refuse shipment.

Analysis of and Response to Comments:

1. Explosions at municipal solid waste resource recovery plants have in many cases been attributed to waste typically generated by households such as gasoline, paint thinner, black power, military ordanance once used as souveniers, etc. Such household waste is not subject to regulation under Subtitle C. If explosives or any other waste are

expected to present a hazard at incinerators, landfills, or resource recovery plants, they can be banned contractually or by ordinance.

2. Although fires attributable to hazardous wastes have accurred at landfills, the Agency's damage report files do not include incidents of fires for waste quantities less than 100 kg. (The files do not contain any reports of damage from quantities under 100 kg. discarded in managed landfills.) The Agency concludes that generators of waste in these quantities will mix their hazardous waste with their non-hazardous waste and the fire (and other) hazard will not be substantial in most cases.

3. If states determine that, because of the hazardous to non-hazardous waste dilution ratio or for any other reason, the §261.5 regulations do not provide adequate protection on a local or state basis, a state may develop more stringent standards.

4&5. The Agency agrees that if small generator waste were labeled, marked, properly packaged, and accompanied by a shipping paper (i.e., manifest), facility operators could better determine whether they could safely handle the waste or were permitted to do so. However, this option was rejected as discussed in Section IX-D of the document because it did not substantially reduce Agency and state administrative costs.

B. Phasing

Summary of Comments

Phasing is not justified because the Agency and state administrative burden is not overwhelming. The Agency studies overstate the administrative burden and projected resource shortfalls as follows:

- Enforcement costs are overstated because the estimate of generators requiring enforcement action (3%) and the number of days for each action (10) is overestimated. The Agency and the states would establish priorities and concentrate on larger generators
- State budgets will be increased especially considering the attention hazardous waste issues are receiving; states may also impose user fees to increase funding.
- The Agency budget will be increased.

Analysis of and Response to Comments:

As discussed throughout the background document, the Agency and the states can use some discretion in administering the generator regulations relating to inspections and resultant enforcement actions, and report processing. However, some high cost administrative tasks cannot be easily minimized such as providing assistance in explaining the Department of Transportations shipping requirements and enforcement of non-compliance actions brought to the attention of the Agency and the states by others. Thus, the Agency and the states may not be able to substantially reduce the administrative burden by discretionary implementation and enforcement of the regulations.