

THURSDAY, JUNE 9, 1977

PART II



FEDERAL ENERGY ADMINISTRATION

INDUSTRIAL ENERGY CONSERVATION PROGRAM

Final Industrial Energy Efficiency
Improvement Targets

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Final Industrial Energy Efficiency Improvement Targets

AGENCY: Federal Energy Administration (FEA).

ACTION: Notice.

SUMMARY: The Federal Energy Administration (FEA) hereby establishes final energy efficiency improvement targets for the 10 most energy-consuming manufacturing industries in the United States. The Energy Policy and Conservation Act requires FEA to publish these targets in the Federal Register, together with a statement of the basis and justification for each target. Such statements are included as appendices to this notice.

EFFECTIVE DATE: Date of issuance.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION: Part D, Title III of the Energy Policy and Conservation Act, Pub. L. 94-163 (EPCA) (42 U.S.C. 6341-6345), requires that FEA establish a program to promote increased energy efficiency by American industry. This program includes the identification and ranking of the major energy-consuming manufacturing industries, the establishment of energy efficiency improvement targets for at least the 10 most energy-consuming industries, the identification of major energy-consuming corporations within those industries for the purpose of determining those which must report progress in improving energy efficiency, and the establishment of a reporting system that provides for either the reporting by the identified corporations of energy efficiency information directly to FEA or, upon exemption, the reporting of such information indirectly through sponsors.

In accordance with section 373 of the EPCA, FEA has identified the 10 most energy-consuming industries in the United States (41 FR 12766, March 26, 1976). These industries, described according to the two-digit Standard Industrial Classification (SIC) Manual published by the Office of Management and Budget, are as follows:

Ranking	Industry	SIC No.
1	Chemicals and allied products.....	28
2	Primary metal industries.....	33
3	Petroleum and coal products.....	29
4	Stone, clay, and glass products.....	32
5	Paper and allied products.....	26
6	Food and kindred products.....	20
7	Fabricated metal products.....	34
8	Transportation equipment.....	37
9	Machinery, except electrical.....	35
10	Textile mill products.....	22

Within each of the 10 identified industries, FEA has identified the corporations that (1) consume at least one trillion British thermal units (Btu's) of energy per year in the United States, and (2) are among the 50 most energy-consuming corporations in the industry (41 FR 54977, December 16, 1976).

With the establishment of the final energy efficiency improvement targets, the chief executive officer of each corporation identified by FEA is required by section 375 of the EPCA to report to FEA on the progress made by the corporation toward meeting the target set for the industry of which such corporation is a part, unless the corporation is exempt from mandatory reporting under section 376(g) of the EPCA. Participation by a corporation in an "adequate voluntary reporting program" is the basis for exemption. FEA has published criteria which a voluntary reporting program must meet for a corporation reporting pursuant to it to be exempt under section 376(g) (41 FR 51866, November 24, 1976) and, after publishing for comment a preliminary list (42 FR 15731, March 23, 1977), has published a final list of exempt corporations on May 9, 1977 (42 FR 23538).

The form to be used by nonexempt corporations was published in the Federal Register for comment on May 4, 1977 (42 FR 22581), and a public hearing was held on May 17, 1977. After consideration of the comments by FEA and completion of the required review by the General Accounting Office, the final form will be published by FEA in the Federal Register and will be made available for

distribution. The first submission of reports by nonexempt corporations to FEA will be required within four weeks of the publication of the form.

INDUSTRIAL ENERGY EFFICIENCY IMPROVEMENT TARGETS

On October 27, 1976, FEA issued for public comment proposed energy efficiency improvement targets (41 FR 48169, November 2, 1976). Public hearings were held for each proposed target in Washington, D.C., between November 22, 1976, and December 10, 1976. Written comments on the targets were also received by FEA.

A discussion of the comments received with regard to a particular industry is contained in each statement of basis and justification that is appended to this notice, as well as in the target support documents that are available for public inspection at the locations and times set forth below. The comments were reviewed by FEA, the Department of Commerce (DOC), the Energy Research and Development Administration (ERDA), and the contractor which prepared support documents for FEA. Where changes were required in data and analysis which affected the final target value, they are noted and explained in the statement of basis and justification and in the target support documents.

After consideration of the comments and all other information available to FEA, FEA hereby establishes the voluntary energy efficiency improvement targets for the 10 most energy-consuming industries in the United States as follows:

Rank	SIC No.	Industry	Proposed net target (percent)		Final (percent)	
			Net target	Offset	Net target	Offset
1	28	Chemicals and allied products.....	(16)	14	14	3
2	33	Primary metal industries.....	(10)	9	9	5
3	29	Petroleum and coal products.....	(12)	12	12	8
4	32	Stone, clay and glass products.....	(17)	16	16	0
5	26	Paper and allied products.....	(17)	20	20	3
6	20	Food and kindred products.....	(14)	13	13	1
7	34	Fabricated metal products.....	(24)	24	24	
8	37	Transportation equipment.....	(18)	16	16	
9	35	Machinery except electrical.....	(15)	15	15	4
10	22	Textile mill products.....	(27)	23	23	8

The table sets forth the net targets for each industry according to the order in which each industry ranks in energy consumption, and also includes the proposed target and the offset (from a gross target) that reflects the energy requirements of special circumstances. In four industries—petroleum and coal products; fabricated metals; machinery except electrical; and transportation equipment—the final net target is unchanged from the proposed target. In five industries—food and kindred products; textile mill products; chemicals and allied products; stone, clay, and glass products; and primary metal industries—the final net target is lower than the proposed target. In one industry, paper and allied products, the final target shows an increase over the proposed target, and the final target has been set on the basis of fossil fuel and

purchased energy instead of on the basis of total energy as originally proposed.

BASIS AND JUSTIFICATION FOR THE TARGETS

As required by section 374(a) (1) and (2) of the EPCA, each energy efficiency improvement target is based on the best available information and is established at the level which represents the maximum feasible improvement in energy efficiency that each industry can achieve by January 1, 1980, taking into account considerations of the technological feasibility and economic practicability of utilizing alternative operating procedures and more energy efficient technologies, as discussed below. Each target represents the percentage reduction in energy consumed per unit of output or activity that can be achieved between calendar year 1972 and January 1, 1980. The statement of the basis and justification

and available manpower could limit progress in energy conservation. While FEA recognizes the relevance of such limiting factors, it believes that a realistic assessment of what could be achieved by industrial establishments has been made. In particular FEA recognizes that the priority position of energy-conservation investments relative to other uses of capital may differ from company to company as well as over time with an individual company.

Industrial commenters seem uniformly concerned that the component goals which were aggregated as an industry-wide target would be applied indiscriminately to their own industries or companies. The FEA is only charged with setting a voluntary target for an SIC code industry. The component goals are not directly, applicable to either component industries or individual companies.

B. Final targets. After the proposed net target was published for comment, FEA

initiated a further review of the underlying data with particular regard to the impact of special circumstances. As a result of this review the initial estimates of energy usage for the nine major four-digit classifications were modified and the estimated energy consumption required to meet special circumstances was determined. Special circumstances applicable to SIC 28 were found to include the following:

1. Energy consumption required by measures to comply with mandated environmental and occupational safety and health regulations.

2. Energy consumption related to non-discretionary changes in the quality of raw materials.

3. Energy consumption related to changes in product mix caused by outside sources.

The following table illustrates the data on 1980 energy usage and the allocation of energy for special circumstances for the four-digit classifications.

Final estimate of energy consumption by industry component

Class	Name	1980 energy usage		Energy required by special circumstances (10 ⁹ Btu's)
		With 1972 technology (10 ⁹ Btu's)	With 1980 technology gross (10 ⁹ Btu's)	
2812	Alkalies and chlorine	264.0	235.0	?
2813	Industrial gases	111.0	102.0	?
2814	Inorganic pigments	99.0	90.0	?
2819	Industrial inorganic chemicals, n.e.c.	541.0	549.0	?
2821	Plastics, synthetic resins, etc.	255.0	210.0	?
2822	Synthetic rubber	75.5	62.5	?
2823	Cellulosic man-made fibers	58.0	50.7	?
2824	Synthetic organic fibers, ex cellulose	273.0	216.0	?
2831	Pharmaceuticals	147.0	111.0	?
2841	Soap, detergents, etc.	49.7	49.2	?
2842	Specialty, cleaning, polishing, sanitation	14.3	11.9	?
2843	Surface active agents, etc.	17.0	14.5	?
2844	Perfumes, cosmetics, etc.	11.9	10.8	?
2851	Paints, varnishes, lacquers, etc.	29.6	23.7	?
2861	Gum and wood chemicals	9.6	8.5	?
2865	Cyclic (coal tar) crudes, etc.	294.0	235.0	?
2869	Industrial organic chemicals, n.e.c.	1,674.0	1,383.0	?
2873	Nitrogenous fertilizers	393.0	312.0	?
2874	Phosphatic fertilizers	167.0	128.0	?
2875	Fertilizers, mixing only	15.7	11.6	?
2879	Pesticides and agricultural chemicals, n.e.c.	42.4	40.7	?
2891	Adhesives and sealants	17.0	14.3	?
2892	Explosives	22.2	43.8	?
2893	Printing ink	3.3	2.6	?
2895	Carbon black	63.4	37.0	?
2899	Chemicals and chemicals preparation, n.e.c.	68.2	54.1	?
Totals (rounded)		4,800.0	3,990.0	130

SIC-28, chemicals and allied products—initial and revised energy efficiency goals by industry and subclass

Class	SIC component name	Revised goals (percent) ¹		
		Initial goal, G _W (percent)	G _W	G ₀
2812	Alkalies and chlorine	8.8	8.4	11.1
2813	Industrial gases	8.1	8.2	8.8
2814	Inorganic pigments	8.4	8.1	8.8
2819	Industrial inorganic chemicals, not elsewhere classified	4.1	4.2	8.8
2821	Plastics, synthetic resins, etc.	17.9	17.7	17.7
2822	Synthetic rubber	24.8	12.6	17.2
2823	Cellulosic man-made fibers	10.8	10.9	12.8
2824	Synthetic organic fibers, ex cellulose	22.7	19.1	20.7
2831	Biological products	(²)		
2833	Medicinal chemicals and botanicals	(²)		
2834	Pharmaceutical preparations	(²)		
2841	Soap, detergents, etc.	16.9	20.8	24.7
2842	Specialty, cleaning, polishing, sanitation	13.2	15.0	19.1
2843	Surface active agents, etc.	13.7	14.0	16.6
2844	Perfumes, cosmetics, etc.	13.3	13.0	14.7
2851	Paints, varnishes, lacquers, etc.	14.5	10.0	10.9
2861	Gum and wood chemicals	11.8	10.8	13.2
2865	Cyclic (coal tar) crudes, etc.	10.1	10.4	11.4
2869	Industrial organic chemicals, not elsewhere classified	17.0	15.4	20.1
2873	Nitrogenous fertilizers	17.9	15.9	17.4
2874	Phosphatic fertilizers	15.1	15.0	20.8
2875	Fertilizers, mixing only	18.2	18.0	21.3
2879	Pesticides and agricultural chemicals, not elsewhere classified	22.4	22.3	26.1
2891	Adhesives and sealants	15.2	14.9	22.3
2892	Explosives	10.0	9.4	15.0
2893	Printing ink	20.2	20.3	21.8
2895	Carbon black	8.4	9.1	16.2
2899	Chemicals and chemical preparation, not elsewhere classified	30.4	25.5	41.6
Total 28		15.4	17.9	20.7
		15.4	14.1	16.3

¹ G_W = a net goal which includes energy required for environmental systems and changes in production mix; G₀ = a gross goal with no consideration for offsetting circumstances.

² Estimates that were modified by additional estimates and data.

³ Estimates that had been modified by additional data and analyses.

⁴ Not elsewhere classified.

Annualized rate of energy usage by SIC 28 on Jan. 1, 1980 (in quads) 10⁹ Btu

With 1972 energy usage and management	4.80
With maximum feasible energy (gross) conservation (but not consideration of special circumstances)	3.99
For energy conservation (offset), including energy requirements for environmental systems, changes in product mix, etc.	.13
With maximum feasible energy (net) conservation, including energy requirements for environmental systems changes in product mix, etc.	4.12

The following is the energy efficiency improvement target set by FEA for SIC 28:

Percent	
Gross target (based on maximum energy efficiency achievable without consideration of special circumstances or conditions of the industry)	17
Offset (required for special industry circumstances and conditions)	3
Net target (based on maximum energy efficiency achievable with consideration of special circumstances and conditions)	14

APPENDIX E: STATEMENT OF BASIS AND JUSTIFICATION FOR THE ENERGY EFFICIENCY IMPROVEMENT TARGET FOR SIC 29—PETROLEUM AND COAL PRODUCTS

1. INDUSTRY DESCRIPTION AND ENERGY BASE

The petroleum and coal products industry is made up of companies engaged in refining petroleum, manufacturing paving and roofing materials, and compounding lubricating oils and greases from purchased materials. This industry is identified as Standard Industrial Classification (SIC) 29. The industry may be further divided into five four-digit SIC product classifications which are listed below with the figures on energy consumption by each classification for the 1972 base year:

SIC	Industry	1972 energy consumed (10 ⁹ Btu's)	Percent of total
2911	Petroleum refinery	2,034.30	88.0
2931	Paving mix and blocks	25.97	.9
2932	Asphalt felts and coatings	19.25	.6
2992	Lubricating oils and greases	5.46	.2
2999	Products of petroleum and coal	7.50	.3
Totals		2,992.52	100.0

The following paragraphs indicate the significant products that are included in each of the SIC categories.

SIC 2911, petroleum refining, comprises establishments primarily engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, and other products from crude petroleum and its fractionation products by use of straight distillation of crude oil, redistillation of intermediate products so produced, plus further cracking of heavy molecules and by other processes.

SIC 2931, paving mixtures and blocks, comprises establishments primarily engaged in manufacturing asphalt and tar paving mixtures, and paving blocks made of asphalt, crosotized wood, and various compositions of asphalt or tar with other materials.

SIC 2932, asphalt felts and coatings, comprises industries engaged in manufacturing

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1. The first part of the text is a list of names and dates, possibly a roster or a list of people who have been involved in the project. The names are written in a cursive script, and the dates are written in a more formal, printed style.

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10. The tenth part of the text is a list of names and dates, possibly a roster or a list of people who have been involved in the project. The names are written in a cursive script, and the dates are written in a more formal, printed style.

COMMENTS OF THE ENVIRONMENTAL DEFENSE FUND
ON THE PROPOSED AMENDMENTS TO
THE FINAL EMISSION STANDARD FOR
VINYL CHLORIDE.
(42 Federal Register 28154, June 2, 1977)

-On October 21, 1976 (41 Fed. Reg. 46560), pursuant to §112 of the Clean Air Act as amended, the Administrator promulgated National Emission Standards for the hazardous air pollutant vinyl chloride. On November 19, 1976 the Environmental Defense Fund (EDF) filed a petition in the U.S. Court of Appeals for the D.C. Circuit for review of these standards. As part of a settlement which led EDF and EPA to move to dismiss the review petition on March 24, 1977, the amendments under consideration were proposed.

The proposed amendments represent a true compromise between what EDF could have pressed for in court and the existing standard. Section 112 of the Clean Air Act requires that emission standards for hazardous air pollutants, such as vinyl chloride, be set "at a level which in the judgment of the Administrator provides an ample margin of safety to protect the public health from such hazardous air pollutants." It clearly requires a health-linked, not a technology-based standard. Yet, inconsistent with the statutory requirement, the original standards were based on what EPA believed industry could accomplish with best available technology. In the Standard Support and Environmental Impact Statement, EPA

BFA - EDF claims that the proposed vinyl chloride regulations constitute a less stringent standard than it could have insisted upon from the court in the litigation which it instituted. Actually, EDF could not have pressed the court to change the original regulations to set an immediate zero emission limitation. The court is only empowered to decide whether EPA's regulations are arbitrary and capricious. At best from EDF's standpoint EPA could have decided that the first rulemaking was arbitrary and not in accordance with §112 of the Clean Air Act. Such a rule would have voided the regulation, and EPA could then, if it chose, have begun another public rulemaking proceeding in which it would presumably be an impartial arbiter of comments from concerned parties. As it stands, however, the proposed standard is the result of coercion by one party with a particular point of view and acquiescence by the EPA (It seems significant to note that EPA has never allowed such an unseemly settlement where industry has in the first instance filed a court challenge to a regulation promulgated by EPA.). In effect the proposed regulation in this instance has been dictated by a private party, and this is contrary to the Clean Air Act which has delegated impartial rulemaking authority exclusively to EPA.

recognized that vinyl chloride is an "apparent non-threshold pollutant" which creates a risk to public health at all levels. Had the case gone to trial, EDF would have taken the position that §112 required a zero emission standard, the only standard adequate to provide the required margin of safety for a non-threshold pollutant. Instead, EDF settled for a compromise which establishes a goal of zero emissions and requires industry to move one step closer to that goal.

The new standard would not require the installation of completely new technology. Industry is not being asked to scrap existing technology. The revised limits can be achieved through the improved operation of existing technology permitting full amortization of the industry's investment in control technology. This should be viewed in contrast with the proposal of the New Jersey Commission on the Incidence of Cancer that any industry emitting one of some seventeen substances reduce emissions to zero or stop producing. Not only will there be no shut-downs required by these amendments, but the industry will be able to continue its growth under this compromise.

The Society of the Plastics Industry, Inc. (SPI) has attempted to portray this settlement as some sort of private agreement between EPA and EDF to promulgate a revised emission standard, largely because they were excluded from the settlement negotiations. There is no legal requirement that an intervenor in a case be permitted to participate in settlement

negotiations. Industry searched for such a legal precedent BFA - While EDF's claim that industry will have the opportunity to challenge in court any final rulemaking which may result from the proposal in question is true, because of the way §112 is drafted anyone opposing the proposed rule bears a heavy burden of showing with particularity in the rulemaking proceedings why the proposed regulation is improper. In short it is anomalous that EDF, a single group purporting to represent the public interest, has not only avoided this burden in its litigation of the original regulations through a settlement agreement with EPA but also it has been able to shift this burden to those parties opposing the new regulations which it has dictated to EPA.

but was unable to find one. Industry has now had ample opportunity to comment on the proposed amendments at a meeting from which EDF was excluded, a public hearing, and through written comments. It should be noted that EDF was also excluded from the industry-EPA sessions which led to promulgation of the original standard. It should also be noted that despite industry's exclusion from settlement negotiations, EDF's attorney kept industry well informed of the outline of the proposed settlement at all stages. Finally, if SPI and its members are unsuccessful in persuading EPA to revise the proposed standards before promulgation, they can always petition the Court of Appeals for review of the standards.

At SPI's request, a public hearing was held by EPA on July 19, 1977 to receive public views and suggestions on the proposed amendments. EDF would like to address the major points in opposition to the proposal raised by SPI at that hearing. The primary areas of interest seemed to be: (1) the absence of new data since the existing standard was promulgated to justify a revision of that standard, (2) the offset policy, (3) the cost of compliance, and (4) the degree of improvement resulting from the amendments. In addition some inapposite comments were made concerning the energy consequences of certain emission reductions. EDF believes these amendments are sound, representing progress toward EPA's goal of zero emissions, and urges their promulgation.

I. Absence of New Data

The most prevalent comment by industry has been, "How could EPA change the vinyl chloride standards when no new information has been developed?" There are several responses to this. First, EDF believes the original standards did not HLK - Basis? Not so. comply with the law,¹ §112 of the Clean Air Act, and so no new information is required to amend the standard to bring it in closer compliance with the law. Second, some significant test data was either not available at promulgation or, as with Dr. Cesare Maltoni's latest experiments, only became available shortly before promulgation, not allowing time for full consideration.

EDF would like to retrace and update the state of medical knowledge concerning vinyl chloride which, under the Clean Air Act, is to serve as the basis for EPA's regulatory actions. It should be noted that no data, developed either before or after promulgation of the existing standard, indicates that any level of exposure to vinyl chloride but zero ppm is safe.

In 1970 Professor Viola presented the results of a pilot experiment which showed that rats exposed to extremely high concentrations of vinyl chloride (30,000 ppm) developed tumors and carcinomas.^{1/} Four years later the B.F. Goodrich Company provided the first report, based on employee deaths from angiosarcoma (liver cancer), which confirmed that vinyl chloride was a human carcinogen. Significantly, not all of HLK - Evidence? In fact, all did.

the vinyl chloride/polyvinyl chloride plant employees who have
 died from angiosarcoma were exposed to high concentrations of
 vinyl chloride. Of the fifteen occupation cases confirmed as
 angiosarcoma of the liver by pathologists at the National
 Cancer Institute, one worker was an accountant employed at a HLK - Not confirmed.
vinyl cloth plant and another operated a machine which applied
polyvinyl chloride to electrical wires as insulation. ^{2/} Where
 two workers were exposed to levels between 1 and 12 ppm, signi-
 ficantly lower than levels to which other polyvinyl chloride
 workers were exposed.

There have also been two confirmed cases of angiosarcoma HLK - Not so.

in individuals who had resided in the vicinity of industrial

vinyl chloride emission sources, and were probably exposed to CER - Certainly literature presenting cases of angiosarcoma that ha
 been "environmentally induced" are open to question based on
 selection of the population examined and notable lack of in
 formation concerning possible etiological alternatives.

plant, but for two reasons they may underrepresent the total HLK - Speculation.

number of community cases. First, they both lived in Connecti-
 cut, a state which probably has the best cancer detection

program in the country. Hence, it is very possible many more HLK - Speculation*

cases exist which have been either undiagnosed or misdiagnosed.
 *The hunt of Angio cases has been so thorough in 1975, that
every case recorded on a death certificate has gone to CDC

Second, one must consider the latency period of 10-20 years

^{3/} for angiosarcoma in light of the fact that not only is the

plastics industry only seventy years old, but a great deal of

its growth has come recently -- at ten percent a year from

1969 to 1974. We may only be seeing the beginning of a cancer - Expletive. HLK

epidemic.

There is also evidence which indicates angiosarcoma is HLK - What kind?
not the only health risk associated with vinyl chloride.

Angiosarcoma served as a "marker disease," its rarity allow-
ing a causal connection with vinyl chloride to be easily drawn.

Studies also point to vinyl chloride as the causal agent in
the development of cancer of the lung, the lymphates, and the
central nervous system as well as the liver.^{4/} In addition,

CDK - Reference 4 should be checked for accuracy and interpretation. A
review of the report by Infante was written by Dr. McMahon for SPI
and is attached.

Dr. Peter Infante, currently with NIOSH, has observed an excess
rate of serious birth defects (teratogenesis) in residents in
Ohio counties with plants emitting vinyl chloride.^{5/} Also,

HLK - His papers have been discredited by CDC.

mutagenicity was indicated in studies by Dr. F. deSerres of
NIHES, on the effect of vinyl chloride on Salmonella -- liver
microsome systems. A higher-than-normal rate of stillbirths
and miscarriages among the wives of vinyl chloride workers and
a high incidence of abnormal chromosomes among the workers
themselves have been observed.^{6/}

CER - While many of the VCM references at higher dose levels may be very
valid, some of the low-dose, short-time exposure data needs to be
seriously evaluated for accuracy in the conclusions. This should
especially be noted on the basis of the poorly designed Infante
study noted in the literature (P.F. Infante, Oncogenic and Mutagenic
Risks in Communities with Polyvinyl Chloride Production Facilities,
1975, ANN. N.Y. ACAD. SCIENCES, 49-57.

HLK - What? Some important test data was made public just as EPA was
promulgating the original standard and may not have been fully
considered. Other data not available at the time the regulations
were promulgated has come to light and serves as an additional
basis for EPA to amend the existing standard to reflect the
health risk posed by lower levels of vinyl chloride. Each group
of tests indicates vinyl chloride induces cancer at extremely
low concentrations. Professor Viola first noted these effects
at 10,000 ppm.^{1/} By June of 1974, Dr. Cesare Maltoni, in the

HLK - Not so - This paper shown to have been speculative.

HLK - Let EPA so state

HLK - What?

HLK - Source?

experiments which originally established the link between vinyl chloride and cancer, reported that angiosarcoma had been produced in rodents by inhalation of as little as 50 ppm in air.^{7/} Just as the original vinyl chloride regulations were promulgated, Dr. Maltoni reported the induction of mammary carcinomas in rodents at levels of 1 ppm.^{8/} All of this data was at least available to EPA prior to promulgation, though there was probably not enough time for EPA to fully consider Dr. Maltoni's data. Completely new data has since become available from tests performed by Professor P. Kaloyanova at the Institute of Hygiene and Nutrition in Sofia, Bulgaria. Professor Kaloyanova found that vinyl chloride exposure at 1 ppm induced carcinomas in both rats and mice.^{9/}

Rather than pointing toward the existence of a threshold for harmful effects, each test with vinyl chloride indicates that almost any level of exposure contributes to the development of cancer. The addition of the new scientific evidence further justifies the amendment of the existing standard. It might even be said EPA has a duty under the law to amend the existing standard to reduce the level of vinyl chloride to which the public is exposed, based on evidence which continues to indicate vinyl chloride is a non-threshold carcinogen.

II. Offset Policy

Under the proposed amendments, before an existing plant could expand or a new plant locate near an existing site,

of what one can consider reliable data when testing is performed on a bacterial system versus a mammalian study. In reference to mammalian studies, certainly the unpublished work of Dr. Maltoni who reported the induction of mammary carcinoma in rodents at levels of 1 ppm, is important. However, more data must be obtained utilizing mammalian species at other selected dose-time concentrations. Additional information must also be elicited on the species population from which experimental animals are selected in order to rule out an unusually sensitive species.

CDK - The data generated by Dr. Maltoni and Dr. Kaloyanova are cited as memos, not published reports. As such these data represent preliminary results from incomplete studies. Appropriate consideration and meaningful evaluation of these observations await completion of the experimental work and publication of final reports. Preliminary results of experiments do not constitute scientific evidence.

HLK - Just the opposite - A dose effect relation is seen:

CER - There is no reason to believe from any of the studies of either recent or past origin that a dose-time response does not exist. As a scientist, one cannot generally consider it prudent not to assume that there is "no threshold" for chemical carcinogens. In fact, it is most likely there is a threshold below which the body is able to handle small amounts of vinyl chloride without adverse effects. Obviously if this is the case, there is no reason to believe that carcinogens pose a threat to human health at slightly higher exposure levels over a relatively brief period of time.

EWS - Awkward

reductions would have to be achieved so there would be no net increase in total vinyl chloride emissions. This offset policy is necessary because, as EPA recognized in the background documents,^{10/} an emission standard by its very nature cannot prevent the total amount of vinyl chloride released from a particular facility from increasing over time should there be expansion or a new plant built. About 4.6 million people live within five miles of existing plants^{11/} and would not be adequately protected if no thought were given to overall levels of exposure. A clustering of large plants on the same site could triple or even quadruple the ambient air concentration produced by just one plant. Another objective is to provide an incentive for industry to develop new technology, which will be rewarded by permitting expansion and new construction.

The offset policy also represents a compromise. An alternative approach could have been a no growth policy within a given radius. EDF, however, felt this was an unreasonable position and did not pursue it, though we believe it could have been legally supported.

It should be emphasized that this "trade-off" approach is not new. EPA has already developed a similar policy for regulating new construction in areas which have not yet attained the primary air quality standards.^{12/} In both cases, the objective is the same: no increase in ambient levels of

EWS - By avoiding being specific, EDF manages to create an impression that growth or expansion could or might create an unhealthy situation.

EWS - This is inconsistent with EDF's zero-risk to health position. Offset permits continuation of something less than zero emissions which EDF contend it necessary to protect health.

EWS - It is new having been in effect for less than a year. Its results are not yet known.

a pollutant which presents a health threat at existing levels.

SPI suggests that applying this policy to a single chemical would be substantially different without saying in what ways.

EPA feels the major difference, that this policy involves a single, confirmed human carcinogen, offers more support than EWS - Implies a no threshold effect. even non-complying air quality regions for pollutants which are not necessarily carcinogenic.

As a first step in implementing this trade-off approach, EWS - (Comment on entire paragraph) If a new facility is the same size as the existing one and yet emissions from the old plus new cannot exceed the old, is this not ultimately going to lead to zero emissions?

a facility which planned to expand would have to calculate the total emissions from the existing operation. If the existing plant were not already in compliance with the present standard, the total emission figure would have to be adjusted to reflect permissible emissions from the existing facility once it is in compliance. If, however, the emissions from the plant are below the emission limit applicable to it, the proposed rules would give the source credit if it maintains its emission levels at the time a new plant is added or expansion undertaken. It is through early compliance and continued reductions that additional capacity can be added in a given geographic area. Of course, degradation from levels for which credit was given will erase the credit and prevent expansion or new construction.

A major source of emissions from controlled vinyl chloride and polyvinyl chloride plants are fugitive emissions. The original standards require either specific emission limits or

The use of certain technology to control these sources.

Reductions in fugitive emissions will offer a means of earning credit under the offset policy in the same way reductions in other areas would.

EWS - Are fugitive emissions consistent from one time to another? I doubt it.

Two methods of calculating credit would be available to each plant. If a baseline level for fugitive emissions could be measured or estimated, assuming compliance with existing standards, any demonstrated reduction could be used as credit under the offset policy. Preference should be given to industry's estimates of fugitive emissions because of the great incentive to be accurate. A low estimate would hinder future expansion and a high estimate of emissions would be harmful publicly. Alternatively, the operator of a plant should be able to isolate a particular source or sources of fugitive emissions, demonstrate that they comply with existing standards, measure or estimate emissions from them, and proceed to reduce those emissions. Any such reduction would be transformed into credit.

EWS - (Comment on entire paragraph) Great reliance on the "graphite" approach.

Fugitive emissions have become the primary source of emissions from vinyl chloride plants. Yet EPA has been unable to tackle the technical problem of how these can be further reduced. One of the principle benefits of the offset policy will be to force industry to address the problem of how to control fugitive emissions. Any technical innovation will be rewarded by permitting further expansion. It is likely, in

EWS - Has this been established?

fact, that fugitive emissions reductions will be the major source of such credit. Once new technology has been developed and tested, it could be mandated for the whole industry, thus moving one step closer to the purpose of §112 of the Clean Air Act -- protection of the public health.

Of course, a developer always has the option of con- EWS - May not be a viable option.

structing a "green field" plant, that is, a plant at an entirely new site. This would prevent further concentration of vinyl chloride emissions in an area where such emissions are recognized as currently posing a potential health risk. Naturally, the new "green field" plant would be subject to the standards for brand new facilities.

Unfortunately, SPI has taken a fairly negative attitude EWS - It might also be said that EDF adopts a negative attitude toward economics, technology and medical data.

about improving the level of vinyl chloride emitted from plants. Rather than attempting to move toward the lowest possible levels, it has opposed any changes. The offset policy will provide industry the incentive it is obviously lacking to improve control technology. That is why the offset policy is central to these proposed amendments. It will also

provide the incentive for industry to offer economic support EWS - Does EDF have a stake in research firms? Who does the research is unimportant.

to firms, such as the Monstern Research Company, which are capable of developing new control technology, like the ozone-UV process. Without economic and technological support from industry, firms such as Monstern Research cannot afford to develop new technology.

..... EWS - Only the first innovator is rewarded. All similar sources must thereafter use by regulation. By definition, such reductions cannot be used for "offset" purposes.

III. Cost of Compliance

SPI attempts to make cost a central issue, even though the statute EPA operates under requires regulations based on protection of health and not cost and technology concerns. To say that Congress did not intend §112 to force plants to close, as SPI contends, does not necessarily imply no economic burdens should be placed on industry. In fact, industry has offered no cost estimates, possibly because the proposed amendments were designed to make use of existing technology and equipment for the most part, making additional costs minimal. In their July 19, 1977 statement, SPI estimated that vinyl chloride emissions will be reduced by 0.1 lb/hr for typical suspension plants and 0.02 lb/hr for typical dispersion resin plants, citing Table 4.3 of the Standard Support Document. SPI goes on in a footnote to mention that the Table referred to does not actually use those figures. The footnote indicates the Table actually lists emissions as zero (in which case no new controls would be required and so the cost would be zero as well). We do not see either figure supported by the Table. In fact, the Table suggests a minimum of 4.4 lb/hr and a maximum of 7 lb/hr subject to further reductions. These figures would suggest that instead of costing \$12.20 per pound of vinyl chloride removed per \$10,000 expended, it would only be \$.61 maximum. These are both nice, but meaningless figures. The only relevant figure is the

increase in the cost per pound of polyvinyl chloride. An additional expenditure of \$10,000 in a typical size polyvinyl chloride plant only represents seven one-thousandths of a cent increase in the cost per pound of producing vinyl chloride.^{13/} In the past, the plastics industry has demonstrated its ability, in complying with emission regulations, to pass on costs without any significant economic harm to the industry. There is every reason to believe this will be the case with these regulations.

Without any support, Mr. Holbrook of SPI states that the cost of building a new plant, required by the offset policy if existing emissions cannot be reduced, will be \$10 million greater than expanding output at an existing plant. This figure might contain unnecessarily negative assumptions, such as locating plants in isolated areas as opposed to existing industrial parks where non-plastic industries are located. This difference could result in exaggerated shipping costs and omission of additional economies. In the absence of further documentation and comparison of costs, these figures are without value. For instance, an investment of considerably less than \$10 million in control technology may be able to reduce existing emissions enough to add the additional capacity needed under the offset policy.

IV. Energy Consumption

EDF has taken an active role in the problems of energy JAM - The EDF has apparently not read or does not understand the guidelines issued by the FEA [see FR 29642 (1977)] attached. The efficiency goals are set not only on a general industry basis (chemical) but also by subclass. In the SPI testimony, the target for the entire chemical industry was cited. If we look in more detail, we find that the target for SOC 2869 (the class which includes VCM) is 15.9% after allowing 1.5% for environmental and other government regulatory actions. It is obvious that the EDF could single out any specific process and claim that its increased energy consumption can be counterbalanced by some other process with even greater improvements. The improvements envisioned by increased energy consumption must justify the increases in energy requirements and it is the position of SPI that they do not.

We are somewhat confused by SPI's use of the FEA industrial energy efficiency targets ^{14/} as an excuse for not adopting control technology for the oxychlorination process. FEA officials we have spoken to indicate it was never FEA's intent to restrict EPA's ability to impose health protective emission requirements on industry. The reporting form used to determine industry's progress toward the targets even separates changes in energy consumption due to government requirements so firms will not bear any onus for excess energy consumption required for compliance. ^{15/} Even more important is the fact that FEA guidelines apply to an entire industry. SPI attempts to apply JAM - The EDF also has not understood the comments relative to the increase in energy requirements to meet a 5 ppm emission limit for the oxychlorination reactor. The SPI testimony (also that of Shell's) stated that the operation of an oxygen-recycle technology system requires a 7% increase in energy over that of the EPA's typical air feed oxychlorination plant. This matter was discussed with EPA at the June meeting in Durham (which is part of the public record). The EPA stated at that time that they had not realized this and would investigate the matter further. In fact the EPA has discussed this further with Shell (and perhaps others) on at least two occasions. These telephone discussions are also part of the public record. The SPI testimony was simply pointing out that, in the support document for the original standard, the EPA rejected the use of incineration to control the oxychlorination because it required an increase of 6% in energy consumption. Since oxygen-recycle technology requires an even greater amount of energy, we fail to see the rationale for the proposal. The EPA is simply incorrect in its preamble statement that the oxygen-recycle technology does not require additional energy.

these to a single process within only a segment of that industry. This misses the point of the targets, which is to give industry the choice of how to achieve increased efficiencies. A minor increase in energy use from one process simply does not justify discarding the standard. SPI's comments also present unsupported figures indicating the energy required for control of the oxychlorination process is greater than EPA originally estimated. Yet, in the preamble to the proposed amendments, EPA states that the adoption of a recycling and oxygen feed system eliminates the supplemental feed problem. This is because

the effluent gas stream would be more concentrated using the technology to be installed in new plants, requiring less energy to reduce emissions.

V. Degree of Emission Reductions

EDF believes the degree of emission reductions resulting from the proposed amendments is significant enough to justify their promulgation. But the actual extent of reduced emissions which result from the proposed amendments is less important than the fact that they represent progress toward EPA's goal of zero emissions -- the only level adequately protective of human health.

SPI maintains inconsistent positions in its prepared statement for the July 19 hearing on the quantity of emissions reduced. On one hand, it is recognized that even with the existing standard, EDC purification and VCM formation plants will have emissions of 2.5 lb/hr excluding any emissions from the oxychlorination process or fugitive emissions. By lowering allowable emissions from 10 to 5 ppm, a 1.25 lb/hr reduction would result. Yet SPI then goes on to say any reduction under the proposed amendments would come solely from improved controls on the oxychlorination process. This ignores the 1.25 lb/hr reduction attributable to other parts of the process. SPI also suggests that there only be a 10 ppm limit on the oxychlorination process. The 0.9 lb/hr reduction from 10 to 5 ppm limit, which this would preclude, is not insignificant. Also considering

JAM - Again EDF has failed to review the data as presented by EPA. has claimed, in its proposed regulation, that there will be a emission reduction of VCM from new typical size oxychlorination plants of 11.6 lb/hr. Using the data presented by EPA in its Support Document, it can be seen that this reduction will come solely from the proposed new standard from oxychlorination vents.

EWS - Again EDF assumes no threshold.

JAM - On the other hand, EPA has also proposed that the allowable emissions from other sources in a VCM plant be reduced by 50%. Again, from the Support Document, the data shows that this is meaningless proposal because the EPA has stated that there are (zero) emissions from these other sources. What SPI attempted point out is that the EPA's table showing "zero" from these other sources is not precisely correct and that the emissions may be about 2.5 lbs/hr. With the proposed 50% reduction, a maximum 1.25 lbs/hr might be realized and that this figure is insignificant.

JAM - Nowhere in the SPI testimony was it suggested that a 10 ppm limit be adopted for oxychlorination vents. SPI simply pointed out that the EPA has published data in its original support document showing the impact of a 10 ppm limit. The EDF's statement that 0.9 lb/hr reduction is "not insignificant" demonstrates that they have little understanding of how to measure impact.

the substantial reduction required to reach 10 ppm, it does not seem unduly difficult, especially at the design stage, to adapt the technology to a lower limit.

Industry has expressed a great deal of concern over the offset policy as a means of reducing community exposure to vinyl chloride. In its July 19 comments, SPI chose to focus attention on the impact of the policy on annual ambient levels from vinyl chloride plants at distances of five miles. (Despite repeated requests, EDF has not received a copy of the dispersion study conducted by Dames and Moore. That study conspicuously does not consider the effect of a single plant expansion which probably causes a greater increase in ambient levels than certain combinations of plants.) Scientific analysis of the process of cancer indicates that even carcinogens HLK at low doses, with levels in parts per billion, may pose a HLK health risk^{16/} and thus constitute a legitimate concern of EPA. It should be recognized that by examining annual levels, instead of shorter time periods, and distances of five miles, instead of closer to the plant, a "best case," from industry's point of view, is described. Figures in the Standard Support Statement demonstrate for those same five mile levels, substantially higher levels will be found at shorter distances with a tremendous difference between short-term and annual ambient levels even for plants complying with the existing standard. These figures demonstrate the value of reducing existing emissions,

as done by the proposed amendments, and the need for an offset policy to prevent the increase, especially of short-term levels, caused by expansion of an existing plant or construction of a new plant. EPA's ambient level estimates, based on dispersion modeling for a large polyvinyl chloride suspension/ EWS - Models are notoriously inaccurate. Any modelling data should be checked against actual measurements.

17/

Time	Concentration
5-minute average maxima	12 ppm
24-hour average maxima	0.68 ppm
annual average maxima	90 ppb

Other modeling done by EPA at greater distances to determine JAM - The data given in Table 6-3, 6-4, 6-5, and 6-6 of the "Support Document" (which is that used by EDF) shows the maximum at one given point VCM concentration for the various types of VCM or PVC plants and has nothing to do with the average exposure of persons living within five miles of a plant.

the maximum ambient levels produced by a cluster of four ethylene dichloride - vinyl chloride and polyvinyl chloride plants complying with the existing standard produced the following figures:

18/

Time	Concentration
5-minute average maxima	3.1 ppm
24-hour average maxima	0.59 ppm
annual average maxima	99 ppb

These figures strikingly demonstrate that for the annual ambient levels in the parts per billion range cited by SPI, short-term levels in the parts per million range could occur. In fact, for plants complying with the existing standard it is possible that ambient air concentrations will exceed the maximum allowable occupational exposure established by the Occupational Safety and Health Administration (OSHA) of a 5 ppm ceiling averaged over a fifteen minute period.

19/

that the proposed standard would have less than a 0.1 b effect on the average annual concentration within the five mile radius. The EPA has failed to evaluate this impact. (See additional comments at top of page 18.)

If one wishes to use EPA data, the model which EDF should have looked at is that contained in the "Quantitative Risk Assessment" document (December 1975). This report shows for uncontrolled plants that persons living as close as 1300 feet from a typical PVC plant, the annual average exposure level is about 300 parts per billion (ppb). Those living five miles from this plant have an average annual exposure of 4 ppb, with an overall average for all persons living within five miles of 17 ppb. For plants controlled to the existing standard, the average annual exposure of all persons living within five miles of a plant is about 2 ppb. These exposure levels are far from the OSHA allowables that the EDF testimony should be dismissed for its lack of candor.

Furthermore, the EDF has missed the point of the SPI testimony which was to challenge the validity of the results of the EPA's calculations in the "Risk Assessment" document. The Dames and Moore study shows that the annual average VCM concentration within five miles of a controlled typical PVC suspension or dispersion plant was less than 0.25 ppb rather than the 2 ppb cited by EPA. Also the SPI testimony offered data (again in Dames and Moore report)

There is reason to believe carcinogens pose a threat to human health at slightly higher exposure levels over a relatively brief period of time. This is significant because control of point sources, whose emissions are to be reduced by one-half under the proposed amendments, has, according to EPA,^{20/} a disproportionately large impact on reducing short-term ambient levels. The tables above demonstrate the likelihood of high short-term ambient levels even when annual ambient levels are much lower. Hence, if short-term exposure to a carcinogen poses a risk, the significance in terms of protecting health of any reductions under the proposed amendments is greater than some numbers might indicate.

That a greater threat may exist from short-term exposure to somewhat higher ambient levels of vinyl chloride is consistent with current theories of chemical carcinogenesis.

One theory proposes that cancer is induced in a single cell.^{21/} This so-called "one-hit" model implies that the total dosage and not the length of exposure determines whether cancer will be induced. Thus a single exposure to vinyl chloride could conceivably cause cancer in the population surrounding vinyl chloride plants. Another theory, known as the multi-hit or multistage model, suggests that a single cell must undergo a series of changes before it can generate a tumor.^{22/} This theory also suggests that exposure to slightly higher concentrations, even of short duration, may pose a threat. The work

posure of the 4.0 million people living within a five mile radius of VCM and PVC plants could be decreased more than eight fold. By June of 1975, EPA had completed extensive surveys of vinyl chloride concentrations in air surrounding three different plant complexes. Findings were that concentration levels were below those contemplated by the EPA standard before implementation of the controls required by the existing standard. Considering this, it would seem unreasonable to propose tighter standards especially without a showing of need before the existing standard was fully implemented and its effectiveness measured.

JAM - The EDF raises the question regarding the effect of short term exposure to higher levels of VCM. I will leave comment on this to the medical group. What the EDF has done, however, is mix "apples and oranges" by citing data from the "Support Document" in an attempt to rebut the SPI testimony concerning the average exposure of persons living within five miles of VCM-PVC plants.

EWS - What is the source of this allegation?

HLK - Only a theory, and not a good one at that. Some carcinogens at one concentration are essential for life, at a second - ex:

CDK - References 21-25 should be checked for accuracy and interpretation. The first sentence of the first paragraph on this page (18) should be referenced. The discussion of theories of chemical carcinogenesis is selective, incomplete and cursory. Again, references 21-23 should be checked in order to determine accuracy and appropriate interpretation.

of Crump, et al.^{23/} ties this all together by showing that most models of carcinogenesis will have a linear dose-response relation at low doses, assuming there are already carcinogens present which act in conjunction with the specific carcinogen under study. By combining these theories, an interesting conclusion is reached: short-term exposure to a chemical carcinogen at slightly higher levels than are normally present HLK - Not so. presents a potentially significant risk of cancer. As the Standard Support Document points out, this is just the type of exposure which will be most affected by the proposed amendments.

Scientific evidence for other carcinogens demonstrates CDK - The first sentence of this paragraph should be referenced. that the risk of actually developing cancer following only a brief exposure is very real. In the case of asbestos, workers HLK - Not VCM.

who were exposed for only one month showed substantially increased rates of lung cancer.^{24/} Persons living outside of asbestos plants, with low level exposures for only seven years or less, developed mesothelioma, an extremely rare cancer associated with asbestos exposure.^{25/} The risks of short-term and low dose exposure to a carcinogen are not just theoretical, and constitute a substantial basis for regulation, especially since §112 requires protection be given with an ample margin of safety from just these types of threats to health.

.... CER - Statements such as, "the risk of actually developing cancer following only a brief (environmental) exposure (to a carcinogen) is very real," cannot be proven and reveal a lack of understanding concerning delineation of persons in high-risk cancer groups. From a review of multiple literature sources, the so-called "environment" is implicated in a large percentage of cancers. This "environment" appears to include all elements influencing cancer incidence originating wholly or largely outside the body. Thus, many authors have concluded that "environment cancers" are induced or related to our personal habits and lifestyle as well as things beyond our personal control. The leading known causes of cancer in the United States are clearly extrinsic. Tobacco and alcohol use and nutrition factors appear to be important contributors to "environment cancers," accounting for well over half of all cancer deaths*. One must also consider the ten percent plus of all cancer cases which apparently have hereditary factors**. Only if these things are considered can a sensitive approach to cancer etiology and control be reached.

CER -

*Wynder, Ernst L, M.D. and Gori, Gio B., M.D., "Contribution of the Environment to Cancer Incidence: An Epidemiologic Exercise," Journal of the National Cancer Institute, April, 1977.

**Fraumeni, Joseph F., Jr., Persons at High Risk of Cancer: An Approach to Cancer Etiology and Control, Academic Press, Inc., New York, 1975.

Exposure to even small doses of vinyl chloride must be viewed in context. First, individual responses to carcinogens vary and there may be people who will be susceptible to carcinogens at low levels. Hence, even a slight reduction in vinyl chloride levels could reduce the incidence of cancer. Also, EPA cannot ignore the fact that people are subjected to many other chemical exposures, such as to polychlorinated biphenyls (PCBs). Half of the U.S. population is believed to have accumulated 1-3 ppm of PCBs in their fatty tissues. These compounds are similar to DDT and other chlorinated pesticides. Their metabolism activates specific liver enzyme systems, enabling the liver to more readily metabolize such chemicals as vinyl chloride. The presence of PCBs and certain pesticide residues in our bodies may render us more susceptible to cancer from a given dose of vinyl chloride than otherwise would be predicted. There may be other additive effects of carcinogens which again would make low dose exposure, or higher dose exposures over a short-term, more dangerous than they would initially seem.

CDK - The discussion on this page argues for an investigation of chemical interaction, potentiation and enzyme induction (all needed) but does not argue for long-term inhalation tests of low levels of vinyl chloride as might be expected from the first sentence.

HLK - Also tobacco.

HLK - Not VCM.

HLK - Very Speculative.

VII. Availability of Interim Emission Limits

EDF recognizes that some plants may experience particular difficulties in meeting the standards under the proposed amendments. EPA has also recognized this and has included a relief valve. A particular plant which, despite a full effort, is unable to comply may request an interim emission limit lower

than that required by the proposed amendments. Plants are given one and one-half years to determine how they will comply. This is a reasonable amount of time to develop projections as to whether compliance will be possible, before installation of equipment begins. EDF believes specific criteria would not be appropriate for granting interim limits because the Administrator will be considering problems applicable to a specific plant. We assume plant operators will have no difficulty obtaining such interim limits if, even with their best efforts, compliance will be impossible.

EWS - Is it safe to make such an assumption. Can EDF speak authoritatively for EPA and other activist groups?

Issuing an interim limit will have an important impact on the surrounding community. It is therefore extremely important that at least a public meeting be held to enable interested citizens and groups to present their position and challenge, where appropriate, industry's basis for an interim limit. Of course, confidential and proprietary information need not be revealed. EPA has an ample record of protecting such information. There is no reason not to have the non-confidential information subject to public discussion. Contrary to SPI's belief, there are many responsible citizens, environmental and civic groups, which could contribute to such a process and possibly even aid industry by suggesting alternative processes and procedures, just as EDF has done with respect to suggesting the ozone-UV process as an alternative control technology.

EWS - This seems inconsistent with the above assumption.

EWS - Is the public an authority on health and control matters to say nothing about technology and economics.

EWS - Had EDF adequately demonstrated this technology? Or is it just a gleam in Houston Research's eye.

EDF has been extremely disappointed with the stance industry has taken in trying to reduce the levels of vinyl chloride, a human carcinogen, released into the environment. The flexibility of the interim emission standard in these proposed amendments points out the real purpose of the amendments -- to have industry, with tremendous technological expertise at its disposal, try harder. Only with their expertise and cooperation can EPA's goal of zero emissions EWS - Zero emissions is unattainable in practice barring a complete shut-down. ever be achieved.

VIII. Conclusions

EDF supports the proposed amendments to the National Emission Standard for vinyl chloride. As we have pointed out, the initially mandated reductions simply do not go far enough toward compliance with the law. These proposed amendments represent an important first step towards achieving EPA's goal of zero emissions and may have a significant effect in protecting public health by reducing short-term exposure to higher doses which the current standard allows. The proposed amendments will also result in a substantial reduction in emissions from new sources which must comply with the reduced emission levels before operation is permitted. Finally, and perhaps most important, the offset policy should encourage the development of technology which will ultimately permit a substantial reduction in fugitive emissions from existing sources, as well as preventing residents of areas surrounding

vinyl chloride plants from being exposed to levels of vinyl chloride two or three times those of just a single controlled plant in their area.

As we stressed at the July 19 hearing, these proposed amendments represent a compromise. Industry will be able to comply without the necessity of developing new technology. The public health will receive a greater degree of protection, closer to that envisaged by the Clean Air Act. EDF supports the promulgation of these amendments.

Footnotes

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