ILLINOIS POLLUTION CONTROL BOARD
September 26, 1991

IN THE MATTER OF:	)	
	)	R90-1
TOXIC AIR CONTAMINANTS LIST	)	(Rulemaking)
(35 ILL. ADM. CODE 232)	)	

PROPOSED RULE. SECOND FIRST NOTICE.

OPINION AND ORDER OF THE BOARD (by J. C. Marlin):

Today the Board acts to send the Illinois Environmental Protection Agency's ("Agency") Second Amended Proposal of Regulations, filed December 18, 1990, to Second First Notice publication in the Illinois Register. The Second Amended Proposal ("Sec. Am. Prop.") is modified by changes agreed to by the Agency through post-hearing public comments, specifically the Agency's Public Comment ("PC") No. 35 and as decided by the Board in today's Opinion and Order. This proposal is required by Section 9.5 of the Illinois Environmental Protection Act ("Act"), Ill. Rev. Stat. 1990 Supp., ch. 111 1/2, par. 1009.5.

PROCEDURAL HISTORY

On January 2, 1990, the Board first received the Agency's Proposal with Statement of Reasons and accompanying Exhibits for filing. At the Board meeting of January 11, 1990 the Board directed the Hearing Officer and the Scientific/Technical Section to assist the Agency in preparation of a more complete proposal for refiling with the Board. On April 17, 1990, three months after that Order, the Agency filed its Amended Proposal with Amended Statement of Reasons and additional exhibits. On April 26, 1990 the Board sent the proposal to First Notice. The proposal was published in the Illinois Register on June 8, 1990. 14 Ill. Reg. 8905 (June 8, 1990). The period for adoption of a final rule following this notice expired June 8, 1991.

Hearings

Following publication of the Amended Proposal, and prior to receipt of the Second Amended Proposal, the Board held four days of hearing regarding the proposed rules. The first of these hearings on the Agency's Amended Proposal took place on June 25 and 26, 1990 in Springfield, Illinois, at the Municipal Building. At this hearing the Agency presented testimony and exhibits to support the proposed regulations, answered pre-filed questions from interested participants and also answered follow-up questions by participants.

A second set of hearings occurred in Chicago, Illinois at the State of Illinois Center on September 6 and 7, 1990. At these hearings interested participants introduced testimony and exhibits concerning the Agency's proposed rules and answered pre-filed and follow-up questions.

The Agency then amended its proposal for the second time by filing its Second Amended Proposal of Regulations and Statement of Reasons ("Sec. Am. Stat.") on December 18, 1990. In order for the Board and the affected public to fully consider these amended regulations a fifth day of hearings was held on March 21, 1991 in Chicago, Illinois. Following the hearing, the Hearing Officer allowed public comments to be filed until June 26, 1991.[1]

Public Comments

During the public comment periods established for these rules the Board received comments from the following individuals, groups and organizations:

PC 1	Union Carbide Chemical and Plastics Co., Inc.
PC 2	State Representative Clem Balanoff
PC 3	Secretary of State, Administrative Code Division
PC 4	Waste Management, Inc.
PC 5	Department of Energy and Natural Resources
PC 6	The Alliance for Responsible CFC Policy
PC 7	Dr. William H. Hallenbeck
PC 8	Illinois Steel Group
PC 9	Amax, Inc. and Climax Metals Co.
PC 10	Halogenated Solvents Industry
PC 11	Amax, Inc. and Climax Metals Co.
PC 12	Illinois Steel Group
PC 13	Chemical Industry Council of Illinois
PC 14	Coalition for Consumer Rights
PC 15	Illinois Environmental Protection Agency
PC 16	Industry Group
PC 17	Illinois Environmental Protection Agency
PC 18	R.R. Donelly and Sons, Co.
PC 19	Herbert C. Bartling
PC 20	Industry Group
PC 21	Chlorobenzene Producers Association
PC 22	Illinois Environmental Protection Agency
PC 23	Sierra Club of Illinois
PC 24	Illinois Steel Group, Illinois Environmental Regulatory Group and Chemical Industry Council
PC 25	Dupont Chemical and Pigments

[1]The hearing transcript contains consecutive page numbers for the June 25-26 and September 6-7 set of hearings. These are referred to as "R.__". The March 21, 1991 hearing restarts at page number 1. For clarity it is referred to as "2R.__".

PC 26 Carol Wechter
PC 27 Halogenated Solvents Industry
PC 28 Halogenated Solvents Industry
PC 29 Styrene Information and Research Center
PC 30 Chemical Industry Council of Illinois
PC 31 Chlorobenzene Producers Association
PC 32 Illinois Steel Group
PC 33 Illinois Chapter of the Sierra Club
PC 34 Illinois Environmental Regulatory Group
PC 35 Illinois Environmental Protection Agency
PC 36 Chlorobenzene Producers Association
PC 37 Illinois Environmental Regulatory Group
PC 38 Ann Hausen
PC 39 Jeffrey Horvath
PC 40 Illinois Environmental Protection Agency
PC 41 Citizens for A Better Environment

DISCUSSION

As stated previously, promulgation of the list of toxic air contaminants is mandated by Section 9.5 of the Illinois Environmental Protection Act. In order to facilitate understanding of the Agency's proposal, Section 9.5 is reprinted in its entirety below:

Section 9.5

a. The General Assembly finds that:

1. The public health and welfare may be endangered by the release of toxic contaminants into the air which are carcinogenic, teratogenic, mutagenic or otherwise injurious to humans or the environment.

2. Existing federal programs may not be adequate to protect the public and the environment from low-level, chronic exposure to toxic air contaminants.

b. It is the purpose of this Section to establish a State program to identify and adopt regulations for toxic air contaminants in Illinois.

c. The Board, pursuant to Title VII, shall promulgate a list of toxic air contaminants. The list published under this subsection shall include any air contaminant which may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or may pose a significant threat to human health or the environment. The Agency shall propose to the Board for

adoption a list which meets the requirement of this subsection.

The provisions of subsection (b) of Section 27 of this Act shall not apply to rulemakings under this subsection (c).

d. The Board, pursuant to Title VII, shall adopt regulations establishing a program to control toxic contaminants released into the air in a manner that protects the public health and the environment. The Agency shall propose regulations to the Board for adoption which meet the requirements of this subsection.

e. The requirements of this Section shall not apply to the following:

1. retail dry cleaning operations;
2. retail and noncommercial storage and handling of motor fuels;
3. combustion processes using only commercial fuel, including internal combustion engines;
4. incidental or minor sources including laboratory-scale operations, and such other sources or categories of sources which are determined by the Board to be of minor significance.

Ill. Rev. Stat. 1990 Supp., Ch. 111 1/2, par. 1009.5

The Agency submitted to the Board a series of proposals to satisfy the requirements of Section 9.5 of the Act. Under Section 9.5 it is the Board's duty to promulgate the list of toxic air contaminants meeting this requirement. The Second Amended Proposal of Regulations represents the Agency's latest proposal to satisfy these mandates.

The Second Amended Proposal of Regulations cannot be understood without some knowledge of the structure and content of its predecessors, the Amended Proposal of Regulations and the Agency's original proposal. After submitting its original proposal the Agency held at least four meetings with concerned citizens, industry and environmental groups for the purpose of explaining the proposal and receiving comments. These meetings took place January 4, 1990 in Rosemont, Illinois; and January 22, 23 and February 26, 1990 in Springfield, Illinois. In addition, the Agency met with the staffs of the Secretary of State and Joint Committee on Administrative Rules in order to clarify and implement the drafting changes requested by the Board. These meetings led to the Amended Proposal of Regulations filed April 17, 1990. (Amended Statement of Reasons, p.4)

Amended Proposal of Regulations

The Amended Proposal was divided into five Subparts, A through E. Subpart A contained general provisions including a description of the program, incorporations by reference and definitions. Subpart B described the mechanism for determining a toxic air contaminant. A toxic air contaminant, under the Amended Proposal, was 1) emitted into the atmosphere in Illinois; and 2) had a score greater than three according to the Agency's toxicity scoring protocol or 3) was classified as a carcinogen according to the Agency's classification mechanism. The Agency's Amended Proposal required it to propose to the Board for listing all contaminants meeting these characteristics.

Subpart C of the Amended Proposal provided for specific procedures to evaluate the characteristics of toxic air contaminants. The proposal gave the mechanism for calculating toxicity scores and identified carcinogen references and corresponding classifications to determine these carcinogens.

Subpart D of that proposal required new emission sources to identify toxic air contaminants and "potential toxic air contaminants" (PTACs) that new emission sources emit or will emit. New emission sources were defined. The Subpart set forth a procedure to determine and list potential toxic air contaminants. The Subpart did not require reporting by existing sources, a change from the Agency's original proposal.

Subpart E of the Amended Proposal pertained to the listing and delisting of toxic air contaminants and potential toxic air contaminants. The proposal required persons to provide notification to the Agency 90 days prior to submitting a proposal to the Board to list or delist a toxic air contaminant. The Agency proposed to update the lists once every two years at a minimum. Under the Amended Proposal, the Agency determined the list of potential toxic air contaminants, though any person could request the Board to list or delist a potential toxic air contaminant.

Finally, Appendix A to the Amended Proposal contained the list of toxic air contaminants, 82 in all. Appendix B described the selection of chronic toxicity studies, determination of lowest toxic dose scores and conversion of data obtained from different routes of exposure and species into equivalent value. Appendix C contained the list of Integrated Risk Information System (IRIS) Class A, B1, and B2 carcinogens.

Second Amended Proposal of Regulations

Following the hearings of September 6 and 7, 1990 the "Industry Group," composed of the Illinois Environmental Regulatory Group, the Chemical Industries Council of Illinois and

the Illinois Steel Group; the Chlorobenzene Producer's Association; and an environmental consortium, including Coalition for Consumer Rights, the Sierra Club, the Chicago Lung Association and the Illinois Public Action Council, submitted public comments expressing their desire that the proposal again be amended. The Agency met with these and other industrial and environmental groups on October 2, 1990 and November 5, 1990 to discuss the suggested changes (Sec. Am. Stat., p. 3). The Agency concluded that, based upon the testimony and comments provided to the Agency by these participants, certain amendments would result in a more effective regulation. In comments sent to the Board dated November 2, 1990 the Agency requested an opportunity to incorporate many of the changes suggested by the participants. The Second Amended Proposal of Regulations, submitted December 18, 1990, was the result.

The Second Amended Proposal of Regulations substantially changed the Amended Proposal. These changes are discussed subpart by subpart below. Only the major changes from the Amended Proposal are reviewed.

Subpart A

This version of the proposal added four documents to the list of incorporations by reference. These four documents describe Good Laboratory Practice Standards used in the chronic toxicity study selection criteria.

The term "potential toxic air contaminant" ("PTAC") was deleted from this subpart reflecting the deletion of the concept from the proposed regulations. See Subpart B, below. The definition of "toxic air contaminant" was also altered to cure a conceptual ambiguity.[2]

Subpart B

The Second Amended Proposal eliminated the requirement that a toxic air contaminant must be emitted into the atmosphere in Illinois. This change eliminated a "cumbersome [potential toxic air contaminant] procedure". (Sec. Am. Stat., p. 4.) The Agency also stated that its statutory interpretation of Section 9.5(b) of the Act did not necessarily mandate such a requirement. The Board finds these reasons amply supported by the record and accepts this change.

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[2]The Board believes that these definitions should be compared to like definitions in the Board and Agency regulations for consistency. For example the terms LD50 and LC50 appear at 35 Ill. Adm. Code 302.603 and 808.110 in different form.

The deletion of the "emitted in Illinois" requirement significantly expanded the list of toxic air contaminants found in Appendix A. Appendix A now lists 266 TACS, an increase of 184 over the number listed in the Amended Proposal.

Subpart C

The Second Amended Proposal modified certain procedures used to select chronic toxicity studies and also modified the procedure used to determine carcinogens. (Section 232.310) The proposal made changes to address the situation where two or more studies each contain the required information to calculate a toxicity score, but where the scores are inconsistent. A procedure is provided to distinguish between laboratory animal toxicity studies, requiring that studies must be conducted according to Good Laboratory Practice Standards. (Appendix B) The Agency stated that this would "assure that reliable, scientific studies are selected". (Sec. Am. Stat., p. 6.)

This subpart continues to provide a procedure to classify contaminants as carcinogens. However, an important change was made. The section identifies four carcinogen references, and for each reference those classifications that the Agency has determined are carcinogens for purposes of Part 232. These are:

1) American Conference of Governmental Industrial Hygienists (ACGIH): Category A1 or A2 carcinogen;

2) United States Department of Health and Human Services, Public Health Service, National Toxicological Program (NTP): Human or Anticipated Human Carcinogen;

3) United States Environmental Protection Agency, Office of Health and Environmental Assessment, Integrated Risk Information System (IRIS): Category A or B1/B2 carcinogen;

4) World Health Organization, International Agency for Research on Cancer (IARC): Category 1 or 2A/2B carcinogen.

The Agency changed its protocol (Section 232.320) so that if a contaminant is identified as a Class C carcinogen by the IRIS reference, this proposal states that such a classification overrides an IARC 2B or NTP "Anticipated Human Carcinogen" listing.[3] The changes are discussed further under "Chemical-Specific Challenges", pp. 14-17 of this Opinion.

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[3]The Board has made additional changes to Section 232.320, based on the record. Id.

Subpart D

The elimination of the "emitted in Illinois" requirement resulted in extensive modification of this Subpart. As Subpart D establishes toxic air contaminant identification requirements for new emission sources, elimination of the PTAC listing procedure wholly eliminated prior Sections 232.430 - 232.450 from the proposal.

Subpart E

Because the PTAC concept has been eliminated from the proposal its listing procedures were removed from Subpart E, the listing and delisting mechanism. In addition, the Second Amended Proposal eliminates the requirement that written notice of the proposal of list or delist TACS be sent to the Agency prior to its submission to the Board. This change was also urged by participants.

ADDITIONAL ISSUES

The Board has identified four major additional issues which were not resolved at hearing or through public comment. These are:

1. Reporting by Existing Sources;
2. Proposals to List or Delist;
3. Environmental Effects; and
4. Chemical Specific Challenges

Reporting by Existing Sources

At the hearing of September 6-7, 1990 the Sierra Club reiterated its position that existing sources be required to report emissions of toxic air contaminants upon at least a one-time basis. (R.872) The idea was to generate a database for the Agency to utilize in the construction of the control program. The group urged that the same mechanisms that are used to identify chemicals for purposes of the Occupational Safety and Health Administration OSHA, SARA 313 requirement, or as is done through the Agency's permitting provisions, be used. This would, in their view, include trace amounts as well as amounts exceeding reporting thresholds. (R. 875)

The question resurfaced during the March 1991 hearing. The Agency, in response to pre-filed questions, stated that the Second Amended Proposal does not require reporting by existing sources because such reporting may require the preparation of an economic impact statement. The Agency stated that it may require such reporting in the control program while confessing that it did not have a source for that information presently.

As put by Ms. Carlson of the Agency:

> In our control program, we may indeed have reporting requirements for existing sources. This will certainly have to be the case if our control program is to include existing sources. But at this time we don't feel there is a real need to have the information. (3R.69)

Under the Agency's proposal then, only new emission sources, including those that modify existing sources, would be required to report toxic air contaminants. (3R.79)

Dan Grissom, Chemical Industry Council, testified that the economic cost of reporting requirements led to an agreement with the sponsors of the air toxics legislation incorporated in the bill's final form. Grissom testified at hearing that he understood that no reporting requirements for existing sources were anticipated under this legislation and that "reporting for existing sources was discussed during the course of the legislative negotiations on Section 9.5 [of the Act]" but that "the parties agreed to exempt this section from an ECIS if the reporting requirements for existing sources were not included." (2R.141) When questioned about the basis for this statement Grissom stated that:

> "in the original proposal... the requirements were included and that a discussion took place with the director of IEPA and several others concerning that issue and those reporting requirements were withdrawn on that basis. (2R.143)

Mr. Grissom admitted that no documentation existed to support his assertion about the legislative compromise. He stated that he understood that a member of Citizens for a Better Environment participated in the compromise on behalf of the environmental community. This assertion was later disputed by Kevin Greene of Citizens for a Better Environment ("CBE") who disavowed any knowledge or participation in this alleged agreement. (PC 41) Katherine Hodge of IERG also testified that she understood the intent behind the exemption to be as Mr. Grissom explained. (2R.223)

The Board has examined Section 9.5(c) of the Act and believes that the express language of that section does not support industry's contention. The Act simply states that "the provisions of Subsection (b) of Section 27 of this Act shall not apply" to a rulemaking to list toxic air contaminants. No qualification of this exemption is found in this section of the Act. Any such informal agreement does not bind the Board or persons who did not participate in its formulation. Further, the Board does not find such an intent expressed through the language of the statute.

Having decided the question of whether legislative intent or subsequent agreements prevent the Board from requiring reporting by existing sources, the Board turns to the question of whether it is desirable. Industry's concern about reporting requirements is cost. The Board notes that current permitting regulations require certain information to be submitted by applicants for construction and operation permits. A source must identify, as part of informational requirements for permitting, "the nature, specific sources and quantities of controlled and uncontrolled air contaminants. See 35 Ill. Adm. Code 201.152, 201.157. For purposes of these sections, "air contaminants" is defined as "any solid, liquid or gaseous matter...capable of being released into the atmosphere." 35 Ill. Adm. Code 201.101. Under these definitions toxic air contaminants would constitute a reportable "air contaminant" likewise. Similarly, under the new Federal Clean Air Act Amendments, existing major and area sources which must obtain permits for defined hazardous air pollutants (HAPS) must also submit information regarding their emissions of these contaminants. 42 USC 7412. Reporting by existing sources, then, is not so much a question of <u>if</u> as it is a question of <u>when</u> the requirement is satisfied.

The Board inquired at hearing as to the potential costs of such a reporting requirement. Industry representatives testified that reporting would carry associated costs but did not supply any specifics. Post-hearing public comments from industry groups did not contain any new information which enlightened the Board.

The Board agrees with the participating environmental groups that a database of existing emissions would assist the development of the control program. With this information in hand, the Agency will be better able to prioritize the control aspects of the program by identifying the most significant emitters.

The Board concludes that reporting by existing sources is a desirable precursor of the control phase. Because toxic air contaminants, as an "air contaminant", should be identified in all permit applications, the Board urges the Agency to review its current permit application files to see if the information is currently being reported as required. If it is not, the Agency, under the current permitting regulations, has the authority to ensure that it is submitted with applications for modifications or renewal in the future. The Board requests further comment by the Agency, however, regarding the interpretation and implementation of these permitting requirements contained in 35 Ill. Adm. Code 201.152 and 201.157. Copies of any forms associated with these requirements should be provided.

The Board has altered the Agency's proposed reporting requirement to include reporting by existing sources at time of permit renewal. In parallel with the language of existing

regulations, this reporting includes the "nature, specific source and quantity" of each TAC. In this manner, the information on emissions of toxic air contaminants by existing sources will be supplied as current permits are renewed over a five year period. The Board inserts this as an affirmative requirement in these regulations to ensure that the information will not be omitted in the future. The Board wishes for participants to comment on these changes, and upon advisability of giving the Agency authority, via this rule, for a one-time reporting requirement for existing emission sources should the Agency find that it needs such information for development of the control strategy. The one-time report could be required within a specified period of time, such as one year. Additionally, the Board requests comment on the alternative of mandatory reporting by existing sources within either one year or a specified period less than five years.

Based upon the above discussion, the Board has altered the title of Subpart D to include renewal applications by striking the word "new" prior to the term "emission sources" and by adding to the text a provision for reporting by existing sources at time of renewal. The Board has also altered Section 232.100 "Introduction" to alert the reader to this change.

Proposals to List or Delist

Under the Agency's Second Amended Proposal any person may propose to list or delist a chemical or compound. (Section 232.500). The basis for listing or delisting however, is the toxicity scoring protocol of Section 232.200. A question arose at hearing whether the Agency would perform the scoring protocol and would submit that information to the record following a proposal to list or delist by an individual. The concern was that, absent this, many well-meaning citizens or groups would not have the technical and scientific support for their proposal. The Agency testified that it intended to verify independent toxicity scoring but warned that if it were required to score all proposals, the process could be abused. (2R. 131-4) The Agency's final public comment did not contain any additional information on this point.

Section 232.500 of the Agency's Second Amended Proposal reads:

SUBPART E: LISTING AND DELISTING

Section 232.500 Procedures for Listing and Delisting Toxic Air Contaminants

a) Any person can propose to the Board to list or delist a toxic air contaminant.

b) The proposal to list a contaminant as a toxic air contaminant, or to delist a toxic air contaminant, must include, at a minimum, the following:

1) the contaminant or toxic air contaminant name and Chemical Abstract Service Number where applicable;

2) the basis for listing or delisting pursuant to Section 232.200;

3) a copy of each study or report justifying the basis of listing; and

c) The Agency will propose an update of the list of toxic air contaminants to the Board no less frequently than once every 2 years.

Based upon the testimony at hearings and the public comments received, the Board finds that changing this section to assure Agency participation in proposals to list or delist toxic air contaminants is warranted. Therefore the Board has added new subsection (c) which reads:

(c) The Agency shall participate in each proposal to list or delist a toxic air contaminant and must provide the Board with a recommendation as to advisability of listing or delisting. Such recommendation must include a toxicity scoring pursuant to Section 232.300 and a carcinogen classification pursuant to Section 232.310.

Should the Agency find this new procedure is abused, the appropriate motion for relief may be made to the Board. See 35 Ill. Adm. Code 102.260. The Board has relettered prior subsection (c) to new subsection (d). The Board has removed the superfluous word "and" from the end of subsection (b)(3) and corrected the punctuation. Finally, the Board has revised subsection (c) to make it equally applicable to listing and delisting.

One further issue arose concerning proposals to list or delist toxic air contaminants. Some participants felt the Agency's scoring protocol was too restrictive and risked omitting certain chemicals or compounds which, though not otherwise meeting the protocol, met the legislature's definition of a toxic air contaminant (Section 9.5 (c)). (R.650-664) The Agency believed however, that without its rigorous scoring protocol, chemicals which were not true TACs would be included upon the list. (PC 35) The Agency, therefore, decided to be under-inclusive rather than over-inclusive.

After review of the record, including all testimony and public comments, the Board finds that "broadening" the characteristics for determining a toxic air contaminant found at Section 232.200 is desirable. This change will have the effect of providing a "general" or narrative description of what constitutes a toxic air contaminant, as is found in the enabling statute. It will complement the numerical scoring and classification protocols developed by the Agency. The Board believes that this change is most reflective of the legislature's intent and most protective of the public. A greater error, the Board believes, would be to fail to include a toxic air contaminant by a restrictive scoring mechanism. Therefore the Board has altered Section 232.200 to reflect this change. This change will also allow delisting of a compound that may meet the numerical or carcinogen criteria. Such compounds may be delisted upon a suitable demonstration before the Board that there are valid scientific reasons that they should not be listed despite meeting the criteria of 232.200 (a) or (b). Such is the case with styrene in the current proposal.

Environmental Effects

The issue of whether the Agency's proposal should address the environmental effects of toxic air contaminants, that is, the effect these contaminants have on plant and animal life, has existed since the beginning of the adoption process. Section 9.5(c) of the Act states, in pertinent part:

> The list published under this subsection shall include any air contaminants which may . . . pose a significant threat to human health or the environment (emphasis added).

Many presubmitted questions reflected the expectation that environmental effects be addressed in the proposed rules. The Agency replied to these concerns at the June 25, 1990 hearing by stating that proven methods of analyzing environmental data are unavailable but were "the subject of continuing scrutiny by the Agency". The Agency also stated that a specific schedule for prioritizing environmental effects has not been addressed. (R. 125)

Participants at the September 6, 1990 hearing echoed the concern that environmental effects must be addressed. David Cox, an Assistant Professor from the University of Illinois, testified that Illinois must consider environmental effects in the new air toxic regulations under the Clean Air Act Amendments of 1990 regardless of what action is taken in the R90-1 proceeding. (R.475) Professor David Schaeffer, an ecosystem health specialist from the University of Illinois, disputed the Agency's contention that environmental effects methodologies did not

exist. He spoke at length about methodologies for assessing the effects of chemicals on ecosystems. (R.536 -592).

The frustration of some of the environmental groups participating led to filing an "alternate proposal" (PC 23) which defined a toxic air contaminant as a "substance which is presently or in the future determined to be an atmospheric hazard or to threaten avian, aquatic, agricultural, or terrestrial biota". Several groups responded in subsequent comments that this proposal would considerably expand the scope of the proposal in both the number of contaminants and the reporting involved.

At the hearing of March 21, 1991 the Sierra Club and the Illinois Coalition for Consumer Rights allowed that they would "quiet their opposition to the Agency's proposal" in order to allow it to proceed. (2R.99) However, the Sierra Club, in post-hearing comments, urged the Board to amend the proposal to require the Agency to include environmental effects and suggested that the current rule be amended during the control rule development process (PC 33).

In its final public comment, the Agency conceded on the point. It stated:

> "Section 9.5 of the . . . Act requires the listing and control of the contaminants which 'may pose a significant threat to . . . the environment'. The relative paucity of toxicological data pertaining to environmental harm has impeded the development of such criteria. However, the Agency hereby commits to proposed to the Board, within 12 to 18 months, environmental criteria for selecting TACs, and the identification of these TACs with those criteria.
>
> In light of this commitment, the Agency opposes creation of interim environmental criteria or list. Such interim measures would drain Agency resources, and may result in the selection of TACs based upon incomplete or inaccurate data."

The Board accepts the Agency's commitment to propose to the Board environmental criteria within 12 to 18 months. To assist the Agency in speeding this process, the Board intends to open a subdocket, Docket B, in this rulemaking. The subdocket will then be held open in anticipation of the Agency's filing. Any person may submit suggestions for inclusion in a list of said contaminants along with supporting data for inclusion in the

record as a public comment. Copies of these public comments must be filed with the Agency.

Chemical Specific Challenges

Over the course of this proceeding, the Board has heard several challenges to the listing of individual chemicals. The major challenges have been to the listing of molybdenum trioxide, ethylene glycol monobutyl ether ("EGBE"; a/k/a 2-butoxyethanol), para-dichlorobenzene ("PDCB"), styrene, and ammonia.

Based on the testimony and exhibits presented by the challenging parties (PC 11 and R. 593-612 and 412-471), the Agency re-calculated the Toxicity Score for molybdenum trioxide and EGBE and, based on these revised scores, recommended in PC 17 that these two chemicals be removed from the Toxic Air Contaminants (TAC) List appearing in Section 232.Appendix A. The Second Amended Proposal reflects this recommendation; neither chemical is proposed to be listed. The Board concurs with the removal of these chemicals from the TAC list.

Both IERG and the Agency have proposed to reduce the Toxicity Score for ammonia from "6" to "3" based on a re-evaluation of the study used to score chronic toxicity (PC 37 and 40, respectively). The Board acknowledges this revision in scoring but notes that with a Toxicity Score of "3", ammonia will remain listed. At this time, the Toxicity Score of each TAC is not part of the proposed rule, so there is no need to amend the proposal. The Board solicits comments on the advisability of including the toxicity score and whether or not the TAC is a carcinogen in the listing.

The remaining challenged chemicals, styrene and PDCB, were listed as TACs by the Agency by virtue of their carcinogen classification pursuant to Section 232.320.

The Chlorobenzene Producers Association (CPA) testified to remove PDCB from the TAC list because of a conflict of scores among the IARC reference and USEPA. IARC lists PDCB as a 2B (probable human) carcinogen, while USEPA, in a final rule, classified it as a C (possible human) carcinogen. CPA argued that USEPA considers all evidence when evaluating the carcinogenicity of a compound and weighs that evidence to determine the most appropriate classification relative to human health. Specific evaluation of human health concerns is beyond the scope of IARC's work. Thus, CPA argued, classification by USEPA should be given more weight if a conflict exists among the references listed in Section 232.320. The Agency accepted this concept in testimony at the March 21, 1991 hearing but wanted only those chemicals listed as C carcinogens on the USEPA IRIS database (as opposed to other documents published by USEPA) to be exempted in this manner. (2R.40-48) CPA countered that final

USEPA rules published by the Administrator were of more weight than IRIS because USEPA had a legal obligation to publish final rulemakings while they are under no obligation to keep IRIS current. The Agency acknowledged that a final rule would be an acceptable source for a USEPA carcinogen only if the rule identified the carcinogen classification as being specific to the inhalation route. (PC 35)

CPA asserts that USEPA's general practice is to hold carcinogen classifications valid for all routes of exposure unless otherwise noted in a final rule (PC 36 at 5) and that, absent evidence to the contrary, USEPA assumes that a substance that is carcinogenic by one route is carcinogenic by all routes (Id. at 9). CPA also cites USEPA's Guidelines for Carcinogen Risk Assessment, 51 Fed. Reg. 33992 (September 24, 1986) as requiring USEPA to take into account all types of human exposure in conducting a cancer risk assessment. (Id.) The final rule classifying PDCB as a Category C carcinogen and regulating PDCB as a drinking water contaminant reviewed all studies where PDCB was tested for carcinogenicity, regardless of exposure route. This final rule, CPA argues, does not specify that PDCB's Category C classification is route-specific. (Id. at 6)

The Agency did not propose to list only those chemicals that are classified as carcinogens by inhalation exposure. Rather, the Agency has listed any chemical which is classified as probable or known human carcinogens without regard to exposure route. In so doing, the Agency appears to be aligned with USEPA's general practice, as described by CPA, that a carcinogen classification is valid for all routes of exposure. The Board fails to see the difference in reasoning between listing a probable or known carcinogen as a toxic air contaminant without regard to route of exposure and choosing to delist a compound where the evidence of human carcinogenicity is questioned by USEPA.

Therefore, based on the discussion above, the Board makes the following revisions to Section 232.320--Carcinogen Classification:

Section 232.320 Carcinogen Classification

a) For purposes of this Part, the Agency will consider a contaminant to be a carcinogen if it is classified in the following manner ~~described in the following table~~:

~~a) Reference — Classification~~

~~ACGIH — Category A1 Carcinogen or Category A2 Carcinogen~~

~~IARC — Category 1 Carcinogen or Category 2A/2B Carcinogen~~

~~IRIS — Category A Carcinogen or Category B1/B2 Carcinogen~~

~~NTP — Human Carcinogen or Anticipated Human Carcinogen~~

1) A Category A1 or A2 Carcinogen by AGCIH; or

2) A Category 1 or 2A/2B Carcinogen by IARC; or

3) A "Human Carcinogen" or "Anticipated Human Carcinogen" by NTP; or

4) A Category A or B1/B2 Carcinogen by the United States Environmental Protection Agency (USEPA) in IRIS or a Final Rule issued in a Federal Register notice by the USEPA as of the effective date of this regulation.

b) If a contaminant is ~~under consideration by reason of being listed~~ identified as an IARC 2B or NTP "Anticipated Human Carcinogen" and that contaminant is also identified as a C ~~e~~Carcinogen by the United States Environmental Protection Agency (USEPA) in the IRIS reference or a Final Rule issued in a Federal Register notice by the USEPA as of the effective date of this regulation, then the Agency will not consider that contaminant to be a carcinogen for the purposes of this Part.

c) The references ACGIH, IARC, and NTP are incorporated by reference in Section 232.110. The reference IRIS is the United States Environmental Protection Agency, Office of Health and Environmental Assessment, Integrated Risk Information System. The categories A, B1, and B2 carcinogens of IRIS as of December 31, 1989, are listed in Appendix C.

In applying this revised language to the case of PDCB, the Board finds that PDCB does not meet the criteria for either toxicity scoring or carcinogen classification, and has thus removed PDCB from the Section 232.Appendix A.

The case of styrene is somewhat different. The Styrene Information and Research Center (SIRC) contended that styrene should not have been listed as a 2B carcinogen by IARC. To question this determination is certainly well beyond the Board's or Agency's authority. SIRC further sought to use the exemption proposed by CPA for USEPA C carcinogens but only in anticipation that styrene would be given a C, D, or E classification by USEPA. The Agency correctly observes that to base a TAC listing on speculation that USEPA may classify styrene as a C carcinogen is unacceptable. The Board does, however, have the authority to review testimony and exhibits placed into the record by SIRC and to evaluate their merit, independent of the Toxicity Scoring or Carcinogen Classification procedures proposed by the Agency.

In testimony before the Board (R.840-842) and in PC 29, SIRC cited a final Department of Labor Occupational Health and Safety Administration (OSHA) Final Rule on Air Contaminants (54 Fed. Reg. 2332; January 19, 1988) that determined that "the current evidence on styrene's carcinogenicity does not support its classification in the final rule as a carcinogen." In this rulemaking, OSHA set new standards for 428 substances, including styrene, that "substantially reduce a significant risk of material health impairment among American workers." The Board believes that OSHA's finding is significant, in part because it was focussed on inhalation exposure of humans. The Board, therefore, proposes to grant SIRC's request to delist styrene at this time, noting that should styrene be listed in the future as a probable human carcinogen by USEPA, it will be re-proposed as a Toxic Air Contaminant.

SIRC also addressed a limited number of comments to the listing of styrene oxide, an intermediate of styrene. (R.837-838) The IARC reference classifies styrene oxide as a Class 2B carcinogen, evidently because of its mutagenicity. SIRC disputes this classification, noting that USEPA does not consider methanol a carcinogen simply because it is metabolized to the known carcinogen formaldehyde. (Id.) Given these limited comments and the absence of additional data, like that of the OSHA rulemaking for styrene, the Board denies the SIRC request to delist styrene oxide.

ORDER

The following rules are hereby submitted for First Notice publication. The Board directs the Clerk of the Board to submit these rules to the Secretary of State for publication in the Illinois Register.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE B: AIR POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER f: TOXIC AIR CONTAMINANTS

PART 232
TOXIC AIR CONTAMINANTS

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Section
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APPENDIX A: List of Toxic Air Contaminants
APPENDIX B: Additional Procedures for Calculating the Chronic Toxicity Score
APPENDIX C: Categories A, B1, and B2 Carcinogens of the Reference United States Environmental Protection Agency, Office of Health and Environmental Assessment, Integrated Risk Information System (IRIS), as of December 31, 1989

AUTHORITY: Implementing Section 9.5 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1009.5 and 1027).
SOURCE: Adopted in R90-1 at Ill. Reg. , effective

SUBPART A: GENERAL PROVISIONS

Section 232.100 Introduction

This Part establishes a program to identify toxic air contaminants. It includes a list of toxic air contaminants, the procedures to determine a toxic air contaminant, the procedures to amend the list, and identification requirements for new and existing emission sources.

Section 232.110 Incorporations by Reference

a) The following materials are incorporated by reference:

American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values and Biological Exposure Indices for 1989-90 (1989). Document can be obtained from: 6500 Glenway Avenue, Building D-7, Cincinnati, Ohio 45211-4438.

Good Laboratory Practice Standards, 21 CFR 58 (1990).

Good Laboratory Practice Standards, 40 CFR 160 (1989).

Good Laboratory Practice Standards, 40 CFR 792 (1990).

Organization for Economic Co-operation and Development (OECD). OECD Guidelines For Testing of Chemicals, Appendix: Good Laboratory Practice [c(81)30(Final)] (November, 1989). Document can be obtained from: OECD Publications and Information Centre, 2001 L Street, N.W., Suite 700, Washington, D.C. 20036-4095.

United States Department of Health and Human Services, Public Health Service, National Toxicological Program (NTP). Fifth Annual Report on Carcinogens (1989). Document can be obtained from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

World Health Organization, International Agency for Research on Cancer (IARC). Monographs on the Evaluation of Carcinogenic Risks to Humans, Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1 to 42, Supplement 7 (1987).

Document can be obtained from: WHO Publications Centre USA, 49 Sheridan Avenue, Albany, New York 12210.

b) This Section incorporates no future editions or amendments.

Section 232.120 Definitions

The definitions of 35 Ill. Adm. Code 201.102, 211.122 and 215.104 apply to this Part, as well as the definitions contained in this Section. Where a definition contained in this Section is more specific than those found in 35 Ill. Adm. Code 201.102, 211.122 and 215.104, it must take precedence in application of this Part.

"Adverse health effect" means a health injury or disease that may be produced by exposure to a contaminant. This includes any decrement in the function of an organ or organ system or any subclinical organ lesion that is likely to lead to a decrement in an organ or organ system function.

"Critical gestation days" means the days during which the formation and differentiation of organs and organ systems occurs during embryonic development.

"Emits" or "Emission" or "Emitted" means any non-accidental release into the atmosphere from an emission source or air pollution control equipment, or fugitive emissions defined according to 35 Ill. Adm. Code 203.124.

"LC50" means the concentration in air of a contaminant that kills, or is estimated to kill, 50 per cent of a population of laboratory animals where the exposure is brief (8 hours or less) and where the route of exposure is inhalation.

"LD50" means the dose of a contaminant that kills, or is estimated to kill, 50 percent of a population of laboratory animals where the route of exposure is ingestion.

"Lowest observed adverse effect level" means the lowest experimentally determined dose at which a statistically or biologically significant indication of the toxic effect of concern is observed.

"New emission source" means an emission source or air pollution control equipment for which a construction permit is required by 35 Ill. Adm. Code 201 after (the effective date of these rules); or an emission source or air pollution control equipment for which an

operating permit is required by 35 Ill. Adm. Code 201, where the owner or operator failed to apply for a construction permit and applies for the first operating permit.

"No observed effect" means the condition where no adverse health effect has been detected.

"Toxic air contaminant" means a contaminant identified pursuant to Section 232.200 and listed in Appendix A.

Section 232.130 Applicability

The requirements of this Part do not apply to the following:

a) RETAIL DRY CLEANING OPERATIONS;

b) RETAIL AND NONCOMMERCIAL STORAGE AND HANDLING OF MOTOR FUELS;

c) COMBUSTION PROCESSES USING ONLY COMMERCIAL FUEL, INCLUDING INTERNAL COMBUSTION ENGINES; AND

d) INCIDENTAL OR MINOR SOURCES INCLUDING LABORATORY-SCALE OPERATIONS, AND SUCH OTHER SOURCES OR CATEGORIES OF SOURCES WHICH ARE DETERMINED BY THE BOARD TO BE OF MINOR SIGNIFICANCE. (Section 9.5(e) of the Act)

SUBPART B: DETERMINATION OF A TOXIC AIR CONTAMINANT

Section 232.200 Characteristics for Determining a Toxic Air Contaminant

A TOXIC AIR CONTAMINANT IS A CONTAMINANT WHICH the Board finds MAY CAUSE OR SIGNIFICANTLY CONTRIBUTE TO AN INCREASE IN MORTALITY OR AN INCREASE IN SERIOUS IRREVERSIBLE OR INCAPACITATING REVERSIBLE ILLNESS, OR MAY POSE A SIGNIFICANT THREAT TO HUMAN HEALTH OR THE ENVIRONMENT. (Section 9.5(c) of the Act)

Unless shown by evidence to not meet the above definition, contaminants which meet the following criteria are presumed to be toxic air contaminants:

a) The contaminant has a Toxicity Score of 3 or greater using the procedures for determining the Toxicity Score described in Section 232.310, or

b) The contaminant is classified as a carcinogen according to Section 232.320.

Section 232.210 Listing of a Toxic Air Contaminant

The Agency will propose to the Board for listing any contaminant which has been determined by the Agency to meet the characteristics identified in Section 232.200. The contaminants found by the Board to be toxic air contaminants are listed in Appendix A.

SUBPART C: PROCEDURES FOR EVALUATING CHARACTERISTICS OF A TOXIC AIR CONTAMINANT

Section 232.300 Purpose

This Subpart identifies the procedures used to evaluate the characteristics of a toxic air contaminant. The Agency will use these procedures in proposing to list or delist toxic air contaminants in Appendix A.

Section 232.310 Procedures for Determining the Toxicity Score

The Toxicity Score is the sum of the Acute Lethality Score and the Chronic Toxicity Score. The Acute Lethality Score is a number which indicates a contaminant's potential to cause death. The Chronic Toxicity Score is a number which indicates a contaminant's potential to cause adverse health effects after chronic exposure.

a) Procedure for Determining the Acute Lethality Score

1) The Acute Lethality Score is derived from toxicological studies using laboratory rats. One of two routes of exposure is used: inhalation or ingestion. Values derived from inhalation are used in preference to values derived from ingestion.

2) The Acute Lethality Score is derived from the following table:

Inhalation Concentration (LC50)	Acute Lethality Score
Less than: 500 mg/cu. m	3
500-4,999 mg/cu. m	2
5,000-50,000 mg/cu. m	1
Greater than: 50,000 mg/cu. m	0

or, if the above data are not available:

Ingestion Dose (LD50)	Acute Lethality Score
Less than: 50 mg/kg	3
50-499 mg/kg	2
500-5,000 mg/kg	1
Greater than: 5,000 mg/kg	0

b) Procedure for Determining the Chronic Toxicity Score
The Chronic Toxicity Score is the product of the Lowest Toxic Dose Score and the Severity of Effects Score.

1) Procedure for Determining the Lowest Toxic Dose Score

The Lowest Toxic Dose Score is a number based upon the lowest dose of a contaminant that causes an observable adverse health effect. The Lowest Toxic Dose Score is derived from the following table:

Dose	Lowest Toxic Dose Score
Less than: 5 mg/kg/day	1
5-50 mg/kg/day	2/3
Greater than: 50 mg/kg/day	1/3

2) Procedure for Determining the Severity of Effects Score

The Severity of Effects Score is a number based upon the category of organ(s) affected and the level of effect upon the organ(s).

A) Organ Categories

There are three categories of organs or organ systems which are identified as follows:

Category	Description
i) Category I	Category I includes: organs, the impairment or loss of which is fatal or usually cannot be compensated for by the body; gonads, the loss of which prevents the transmission of genetic material; and, adverse reproductive outcome including stillbirth, miscarriage, or reduced litter size (animal studies). The Category I organs are: Lungs, Heart, Brain, Spinal

Cord, Kidneys, Liver, Bone Marrow, and Gonads.

ii) Category II — Category II includes: organs, the impairment or loss of which may be fatal, but which can be compensated for by drug or replacement therapy; adverse effect on an immune function which may be life threatening; changes in the composition or function of blood constituents which may be life threatening; and, certain fetotoxic effects including premature birth, reduced birth weight, and reduced morphometric parameters. The Category II organs are: Adrenals, Thyroids, Parathyroids, Pituitary, Pancreas, Esophagus, Stomach, Small Intestine, Large Intestine, Lymph Nodes, Thymus, Trachea.

iii) Category III — Category III includes: organs, the impairment or loss of which is not life threatening but may result in functional or emotional handicaps; adverse effect on an immune function which is not life threatening; changes in the composition or function of blood which are not life threatening but may result in functional handicaps. Category III organs include, but are not limited to: Oviducts, Epididymides, Uterus, Prostrate, Seminal Vesicles, Ductus Deferens, Penis, Vagina, Eyes, Bone, Nose, Peripheral Nerves, Muscles, Urinary Bladder, Blood Vessels, Ears, Gallbladder, Larynx, Mammary Glands,Salivary Glands, Skin, Spleen, Tongue, Teeth, Ureter, Urethra, Pharynx.

B) Levels of Effect

There are four levels of effect: Serious Irreversible ("SI"); Serious Reversible ("SR"); Non-serious Irreversible ("NI"); and Non-serious Reversible ("NR").

i) A serious effect is an incapacitating condition or a condition which significantly contributes to an increase in mortality.

ii) A non-serious effect is a non-incapacitating condition or a condition which is unlikely to contribute to an increase in mortality.

iii) An irreversible effect is one that is permanent or would require medical treatment to correct.

iv) A reversible effect is a temporary effect.

C) Table of Severity of Effects Scores

The Severity of Effects Score for any level of effect observed in an organ belonging to a specified organ category is derived from the following table:

		Organ Category I	II	III
Level of Effect	SI	6	5	4
	SR	5	4	3
	NI	4	3	2
	NR	3	2	1
No Observed Effect		0	0	0

D) When a study identifies an adverse health effect on multiple organs within the same category at the lowest observed adverse effect level, the Severity of Effects Score is increased by a value of 1. In no event can the Severity of Effects Score be greater than 6.

3) Additional procedures for calculating the Chronic Toxicity Score are described in Appendix B.

Section 232.320 Carcinogen Classification

a) For purposes of this Part, the Agency will consider a contaminant to be a carcinogen if it is classified in the following manner:

1) A Category A1 or A2 Carcinogen by AGCIH; or
2) A Category 1 or 2A/2B Carcinogen by IARC; or

3) A "Human Carcinogen" or "Anticipated Human Carcinogen" by NTP; or

4) A Category A or B1/B2 Carcinogen by the United States Environmental Protection Agency (USEPA) in IRIS or a Final Rule issued in a Federal Register notice by the USEPA as of the effective date of this regulation.

b) If a contaminant is identified as an IARC 2B or NTP "Anticipated Human Carcinogen," and that contaminant is also identified as a C Carcinogen by the United States Environmental Protection Agency (USEPA) in the IRIS reference or a Final Rule issued in a Federal Register notice by the USEPA as of the effective date of this regulation, then the Agency will not consider that contaminant to be a carcinogen for the purposes of this Part.

c) The references ACGIH, IARC, and NTP are incorporated by reference in Section 232.110. The reference IRIS is the United States Environmental Protection Agency, Office of Health and Environmental Assessment, Integrated Risk Information System. The categories A, B1, and B2 carcinogens of IRIS as of December 31, 1989, are listed in Appendix C.

SUBPART D: IDENTIFICATION REQUIREMENTS FOR EMISSION SOURCES

Section 232.400 Purpose

This Subpart establishes toxic air contaminant identification requirements for new emission sources and for existing sources at time of permit renewal.

Section 232.410 Identification Requirements

Owners or operators of 1) new emission sources or 2) existing sources shall identify with each new permit application or renewal application for that emission source, by name and Chemical Abstract Service Number where applicable, the nature, specific source and quantity of each toxic air contaminant identified in Appendix A, which is or will be emitted by the source.

SUBPART E: LISTING AND DELISTING

Section 232.500 Procedures for Listing and Delisting Toxic Air Contaminants

a) Any person can propose to the Board to list or delist a toxic air contaminant.

b) The proposal to list a contaminant as a toxic air contaminant, or to delist a toxic air contaminant, must include, at a minimum, the following:

1) The contaminant or toxic air contaminant name and Chemical Abstract Service Number where applicable;

2) The basis for listing or delisting pursuant to Section 232.200;

3) A copy of each study or report used to justify the proposal.

c) The Agency shall participate in each proposal to list or delist a toxic air contaminant and must provide the Board with a recommendation as to advisability of listing or delisting. Such recommendation must include a toxicity scoring pursuant to Section 232.300 and a carcinogen classification pursuant to Section 232.310.

d) The Agency will propose an update of the list of toxic air contaminants to the Board no less frequently than once every 2 years.

Section 232.APPENDIX A: List of Toxic Air Contaminants

Chemical Name	Chemical Abstract Service Number
Acetaldhyde	75-07-0
Acetamide	60-35-5
Acetonitrile	75-05-8
Acetophenone	98-86-2
Acrolein	107-02-8
Acrylamide	79-06-1
Acrylic acid	79-10-7
Acrylonitrile	107-13-1
Aldrin	309-00-2
Allyl chloride	107-05-1
2-Aminoanthraquinone	117-79-3
4-Aminoazobenzene	60-09-3
o-Aminoazotoluene	93-56-3
4-Aminobiphenyl	92-67-1
1-Amino-2-methylanthraquinone	82-28-0
Amitrole	61-82-5
Ammonia	7664-41-7
Aniline	62-53-3
o-Anisidine	90-04-0
o-Anisidine hydrochloride	134-29-2
Antimony	7440-36-0
Arsenic	7440-38-2
Asbestos (friable)	1332-21-4

Azobenzene	103-33-3
Benz(a)anthracene	56-55-3
Benzene	71-43-2
Benzidine	92-87-5
Benzo(a)pyrene	50-32-8
Benzo(b)fluoranthene	205-99-2
Benzo(j)fluoranthene	205-82-3
Benzo(k)fluoranthene	207-08-9
Benzotrichloride	98-07-7
Benzyl chloride	100-44-7
Benzyl violet	1694-09-3
Beryllium	7440-41-7
Beryllium oxide	1304-56-9
Biphenyl	92-52-4
Boron trifluoride	7637-07-2
Bromoform	75-25-2
1,3-Butadiene	106-99-0
Butyl benzyl phthalate	85-68-7
beta-Butyrolacetone	3068-88-0
C.I. Basic Red 9 monohydrochloride	569-61-9
Cadmium	7440-43-9
Cadmium oxide	1306-19-0
Caprolactam	105-60-2
Carbaryl	63-25-2
Carbofuran	1563-66-2
Carbon black	1333-86-4
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Carbosulfan	55285-14-8
Chloramben	133-90-4
Chlordane	57-74-9
Chlorinated dibenzodioxins	--
Chlorinated dibenzofurans	--
Chlorendic acid	115-28-6
Alpha-Chlorinated toluenes	--
Chlorinated paraffins (C12, 60% chlorine)	108171-26-2
Chlorine	7782-50-5
Chloroacetic acid	79-11-8
Chlorobenzene	108-90-7
Chloroform	67-66-3
Chloromethyl methyl ether	107-30-2
4-Chloro-2-methylpropene	563-47-3
4-Chloro-o-phenylenediamine	95-83-0
p-Chloro-o-toluidine	95-69-2
Chloroprene	126-99-8
Chromium	7440-47-3
Chromium VI	18540-29-9
Chrysene	218-01-9
Coal tar (pitch) volatiles	65996-93-2
Cobalt	7440-48-4
Coke Oven Emissions	--
Copper	7440-50-8

p-Cresidine	120-71-8
Creosote (Coal)	8001-58-9
Cresol (mixed isomers)	1319-77-3
Cyanazine	21725-46-2
Cyclohexanone	108-94-1
DDD	72-54-8
DDE	72-55-9
DDT	50-29-3
2,4-Diaminoanisole	615-05-4
2,4-Diaminoanisole sulfate	39156-41-7
4,4'-Diaminodiphenyl ether	101-80-4
2,4-Diaminotoluene	95-80-7
Dibenzo(a,h)acridine	226-36-8
Dibenzo(a,j)acridine	224-42-0
Dibenzo(a,h)anthracene	53-70-3
Dibenzo(a,e)pyrene	192-65-4
Dibenzo(a,h)pyrene	189-64-0
Dibenzo(a,i)pyrene	189-55-9
Dibenzo(a,l)pyrene	191-30-0
Dibutyl phthalate	84-74-2
1,2-Dibromo-3-chloropropane	96-12-8
1,2-Dibromoethane [Ethylene dibromide]	106-93-4
3,3'-Dichlorobenzidine	91-94-1
3,3'-Dichlorobenzidine dihydrochloride	612-83-9
Dichloroethyl ether	111-44-4
2,4-Dichlorophenoxyacetic acid [2,4-D]	94-75-7
1,2-Dichloropropane	78-87-5
1,3-Dichloropropylene	542-75-6
Dichlorvos	62-73-7
Dieldrin	60-57-1
Diepoxybutane	1464-53-5
1,2-Diethylhydrazine	1615-80-1
Di(2-ethylhexyl) phthalate	117-81-7
Diethyl sulfate	64-67-5
Diglycidyl resorcinol ether	101-90-6
3,3'-Dimethoxybenzidine	119-90-4
Dimethyl acetamide	127-19-5
4-Dimethylaminoazobenzene	60-11-7
3,3'-Dimethylbenzidine [o-Tolidine]	119-93-7
Dimethylcarbamoyl chloride	79-44-7
Dimethyl formamide	68-12-2
1,1-Dimethylhydrazine	57-14-7
1,2-Dimethylhydrazine	540-73-8
Dimethyl sulfate	77-78-1
Dinitrocresol	534-52-1
2,4-Dinitrophenol	51-28-5
2,4-Dinitrotoluene	121-14-2
1,4-Dioxane	123-91-1
1,2-Diphenylhydrazine	122-66-7
Disulfoton	298-04-4
Endothall	145-73-3
Epichlorohydrin	106-89-8

2-Ethoxyethanol	110-80-5
Ethyl acrylate	140-88-5
Ethylene dichloride	107-06-2
Ethylene oxide	75-21-8
Ethylene thiourea	96-45-7
Etridiazole	2593-15-9
FMC-67825	95465-99-9
Fluorine	7782-41-4
Folpet	133-07-3
Formaldehyde	50-00-0
Furmecyclox	60568-05-0
Heptachlor	76-44-8
Heptachlor epoxide	1024-57-3
Hexachlorobenzene	118-74-1
Hexachloro-1,3-butadiene	87-68-3
Hexachlorocyclopentadiene	77-47-4
Hexachlorodibenzo-p-dioxin	19408-74-3
Hexachloroethane	67-72-1
Hexamethylphosphoramide	680-31-9
Hydrazine	302-01-2
Hydrazine sulfate	10034-93-2
Hydrogen cyanide	74-90-8
Indeno(1,2,3-cd)pyrene	193-39-5
Isophorone diisocyanate	4098-71-9
Lead	7439-92-1
Lindane (alpha)	319-84-6
Lindane (beta)	319-85-7
Lindane (gamma)	58-89-9
Lindane (mixed isomers)	608-73-1
Linuron	330-55-2
Malathion	121-75-5
Manganese	7439-96-5
Mercury	7439-97-6
2-Methoxyethanol	109-86-4
2-Methoxyethanol acetate	110-49-6
5-Methylchrysene	3697-24-3
4,4'-Methylenebis(2-chloroaniline)	101-14-4
Methylenebis(phenylisocyanate)	101-68-8
4,4'-Methylenebis(N,N'-dimethyl) benzenamine	101-61-1
Methylene chloride	75-09-2
4,4'-Methylenedianiline	101-77-9
4,4'-Methylenedianiline dihydrochloride	13552-44-8
Methyl hydrazine	60-34-4
Methyl iodide	74-88-4
Methyl mercaptan	74-93-1
N-Methyl-N'-nitro-N-nitrosoguanidine	70-25-7
Metolachlor	51218-45-2
Michler's Ketone	90-94-8
Mirex	2385-85-5
Monoethanolamine	141-43-5
beta-Naphthylamide	91-59-8
Nickel	7440-02-0

Nitric acid	7697-37-2
Nitrilotriacetic acid	139-13-9
Nitrobenzene	98-95-3
5-Nitro-o-anisidine	99-59-2
2-Nitropropane	79-46-9
N-Nitroso-n-butyl-N-(3-carboxypropyl) amine	38252-74-3
N-Nitroso-n-butyl-N-(4-hydroxybutyl) amine	3817-11-6
N-Nitrosodi-n-butylamine	924-16-3
N-Nitrosodiethanolamine	1116-54-7
N-Nitrosodiethylamine	55-18-5
N-Nitrosodimethylamine	62-75-9
N-Nitrosodiphenylamine	86-30-6
N-Nitrosodi-n-propylamine	621-64-7
N-Nitroso-N-ethylurea	759-73-9
3-(N-Nitrosomethylamino) propionitrile	60153-49-3
N-Nitrosomethylethylamine	10595-95-6
N-Nitroso-N-methylurea	684-93-5
N-Nitrosomethylvinylamine	4549-40-0
N-Nitrosomorpholine	59-89-2
N-Nitrosonornicotine	16543-55-8
N-Nitrosopiperidine	100-75-4
N-Nitrosopyrrolidine	930-55-2
N-Nitrososarcosine	13256-22-9
Nitrofen	1836-75-5
Pentachloronitrobenzene	82-68-8
Pentachlorophenol	87-86-5
Peracetic acid	79-21-0
Phenol	108-95-2
Phenylhydrazine	100-63-0
Phorate	298-02-2
Phosphorus	7723-14-0
Phosphorus oxychloride	10025-87-3
Phosphorus pentachloride	10026-13-8
Polybrominated biphenyls	--
Polychlorinated biphenyls	1336-36-3
Potassium bromate	7758-01-2
Propane sultone	1120-71-4
beta-Propiolactone	57-57-8
Propyleneimine	75-55-8
Propylene oxide	75-56-9
Pyrene	129-00-0
Quinoline	92-22-5
Selenium	7782-49-2
Sodium borate	1303-96-4
Styrene oxide	96-09-3
Sulfallate	95-06-7
Sulfuric acid	7664-93-9
Terbufos	13071-79-9
1,1,2,2-Tetrachloroethane	79-34-3
Tetrachloroethylene	127-18-4
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
4,4'-Thiodianiline	139-65-1

Thiophenol	108-98-5
Thiourea	62-56-6
Thorium dioxide	1314-20-1
Toluene	108-88-3
Toluene-2,4-diisocyanate	584-84-9
Toluene-2,6-diisocyanate	91-08-7
o-Toluidine	95-53-4
o-Toluidine hydrochloride	636-21-5
p-Toluidine	106-49-0
Toxaphene	8001-35-2
1,2,4-Trichlorobenzene	120-82-1
Trichloroethylene	79-01-6
2,4,6-Trichlorophenol	88-06-2
Trimethyl benzene	25551-13-7
1,2,4-Trimethyl benzene	95-63-6
2,4,6-Trinitrotoluene	118-96-7
Tris(2,3-dibromopropyl) phosphate	126-72-7
Trypan blue	72-57-1
Urethane [Ethyl carbamate]	51-79-6
Vinyl bromide	593-60-2
Vinyl chloride	75-01-4
Vinylidene chloride	75-35-4
Antimony compounds Includes any unique chemical substance that contains antimony as part of that chemical's infrastructure	--
Arsenic compounds Includes any unique chemical substance that contains arsenic as part of that chemical's infrastructure	--
Beryllium compounds Includes any unique chemical substance that contains beryllium as part of that chemicals infrastructure	--
Cadmium compounds Includes any unique chemical substance that contains cadmium as part of that chemical's infrastructure	--
Chromium compounds Includes any unique chemical substance that contains chromium as part of that chemical's infrastructure	--
Cobalt compounds Includes any unique chemical substance	--

that contains cobalt as part of that chemical's infrastructure

Cyanide compounds --
x(pos) CN(neg) where X = H(pos) or any other group where a formal dissociation can be made. For example, KCN or $Ca(CN)_2$

Lead compounds
Includes any unique chemical substance that contains lead as part of that chemical's infrastructure

Manganese compounds --
Includes any unique chemical substance that contains manganese as part of that chemical's infrastructure

Mercury compounds --
Includes any unique chemical substance that contains mercury as part of that chemical's infrastructure

Nickel compounds --
Includes any unique chemical substance that contains nickel as part of that chemical's infrastructure

Section 232.APPENDIX B Additional Procedures for Calculating the Chronic Toxicity Score

a) Procedures to be used in selecting chronic toxicity studies.

1) Chronic toxicity studies in which all of the items in subsection (a)(1)(A) of this appendix are identified or measured with adequate specificity to use the equations in subsection (b) of this appendix are to be given first preference.

A) Study items to be identified or measured:

i) Test species;

ii) Contaminant dose;

iii) Duration of exposure must be at least 21 days, except for developmental studies in animals, in which case the duration of

exposure must be during critical gestation days;

iv) Route of exposure; and

v) Effect of exposure.

B) In the event that two or more studies are available in which the items in subsection (a)(1)(A) are deemed to have been identified or measured, but which give inconsistent results, the study must be selected by the following procedures:

i) In the event that two or more studies are laboratory animal toxicity studies, the study that is conducted in accordance with or consistent with Good Laboratory Practice Standards must be used. Good Laboratory Practice Standards are incorporated by referenced in Section 232.110.

ii) In the event that the application of the procedure in subsection (i) fails to result in the selection of one study, then the study that results in the highest Chronic Toxicity Score must be used.

2) Studies that identify or measure all of the items in subsection (a)(l)(A) of this appendix except for the contaminant dose, must be given second preference.

A) For a second preference study, the Lowest Toxic Dose Score for a given species and a given route of exposure must be determined according to the following table:

Species	Route of Exposure	Lowest Toxic Dose Score
Human	Inhalation	1
Human	Non-inhalation	2/3
Non-human	Inhalation	2/3
Non-human	Non-inhalation	1/3

B) In the event that two or more second preference studies are available, the study that results in the highest Chronic Toxicity Score must be used.

3) A contaminant for which there are insufficient data in the study to identify the elements of either a first

or second preference study, must be determined to have no data and be assigned a Chronic Toxicity Score of 0.

b) The following general equation must be used to obtain the dose in units of milligram per kilogram per day for the oral, gavage and inhalation routes of exposure: Dose = (I)(C)(TCF)/UF

1) For the routes of exposure listed below, use the following:

TCF=Time Correction Factor of 1, unless the exposure was intermittent, in which case the fraction of time during which exposure occurred is used (e.g., 5 days/week = 5/7 = 0.71).

UF= Uncertainty Factor of 10, used only when data are for exposure periods less than 90 days. In the case of fetotoxicity and teratogenicity studies, an Uncertainty Factor of 1 must be used.

2) Where the exposure is oral use the following:

A) Oral Exposure via Food:

I= Food Intake in kilogram of food ingested per kilogram of body weight per day (kg/kg-d) (refer to Chart 1 for standard values);

C= Contaminant Concentration in food in units of milligram per kilogram (mg/kg); or

B) Oral Exposure via Water:

I= Water Intake in liter of water ingested per kilogram of body weight per day (L/kg-d) (refer to Chart 1 for standard values);

C= Contaminant Concentration in water in units of milligram per liter (mg/L);

3) Where the exposure is via gavage use the following:

The product (I X C) in the above equation must be replaced by Gavage Dose (GD) in units of milligram of contaminant ingested per kilogram of body weight per day (mg/kg-d); or

4) Where the exposure is via inhalation use the following:

I= Air intake in cubic meter of air inhaled per kilogram of body weight per day (cu.m3/kg-d) measured as the product of Ventilation Rate (VR) (refer to Chart 1 for standard values) and Inhalation retention factor (RF) (assumed to be 0.5 for this procedure);

C= Contaminant Concentration in air in units of milligram per cubic meter (mg/cu.m).

Chart 1
Summary of Physiological Parameters

Species	Water Intake L/kg/day	Food Intake kg/kg/day	Ventilation cu.m/kg/day
Cat	0.100	0.050	0.46
Dog	0.025	0.025	0.31
Guinea Pig	0.075	0.040	0.58
Human	0.029	0.025	0.26
Monkey	0.14	0.07	0.32
Mouse	0.25	0.15	1.44
Rabbit	0.065	0.030	0.46
Rat	0.10	0.050	0.66

Section 232.APPENDIX C: Categories A, B1, and B2 carcinogens of the reference United States Environmental Protection Agency, Office of Health and Environmental Assessment, Integrated Risk Information System (IRIS), as of December 31, 1989

Chemical Name	CAS Number	Category
Acetaldehyde	000075-07-0	B2
Acrylamide	000079-06-1	B2
Acrylonitrile	000107-13-1	B1
Aldrin	000309-00-2	B2
Aniline	000062-53-3	B2
Arsenic	007440-38-2	A
Azobenzene	000103-33-3	B2
Benzene	000071-43-2	A
Benzidine	000092-87-5	A
Benzo(a)pyrene	000050-32-8	B2
Benzyl chloride	000100-44-7	B2
Beryllium	007440-41-7	B2
Bis(2-ethylhexyl) phthalate	000117-81-7	B2
Bis(chloroethyl) ether	000111-44-4	B2

Bis(chloromethyl) ether	000542-88-1	A
1,3-Butadiene	000106-99-0	B2
Cadmium	007440-43-9	B1
Carbon Tetrachloride	000056-23-5	B2
Chlordane	000057-74-9	B2
Chloroform	000067-66-3	B2
Chloromethyl Methyl Ether	000107-30-2	A
Chromium(VI)	18540-29-9	A
Coke Oven Emissions	008007-45-2	A
Creosote	008001-58-9	B1
DDD	000072-54-8	B2
DDE	000072-55-9	B2
DDT	000050-29-3	B2
1,2-Dichloroethane	000107-06-2	B2
1,3-Dichloropropene	000542-75-6	B2
Dichlorovos	000062-73-7	B2
Dieldrin	000060-57-1	B2
Dimethyl Sulfate	000077-78-1	B2
1,4-Dioxane	000123-91-1	B2
1,2-Diphenylhydrazine	000122-66-7	B2
Epichlorohydrin	000106-89-8	B2
Ethylene Dibromide	000106-93-4	B2
Folpet	000133-07-3	B2
Formaldehyde	000050-00-0	B1
Furmecyclox	060568-05-0	B2
Heptachlor	000076-44-8	B2
Heptachlor Epoxide	001024-57-3	B2
Hexachlorocyclohexane, technical	000608-73-1	B2
alpha-Hexachlorocyclohexane	000319-84-6	B2
Hexachlorodibenzo-p-dioxin	019408-74-3	B2
Hydrazine, Hydrazine Sulfate (mixture)		B2
Lead and Compounds (Inorganic)		B2
4,4'-MethyLenebis(N,N'-dimethyl) benzenamine	000101-61-1	B2
N-Nitroso-N-methylethylamine	010595-95-6	B2
N-Nitroso-di-n-butylamine	000924-16-3	B2
N-Nitrosodi-N-propylamine	000621-64-7	B2
N-Nitrosodiethanolamine	001116-54-7	B2
N-Nitrosodiethylamine	000055-18-5	B2
N-Nitrosodimethylamine	000062-75-9	B2
N-Nitrosodiphenylamine	000086-30-6	B2
N-Nitrosopyrrolidine	000930-55-2	B2
Nickel Carbonyl	013463-39-3	B2
Nickel Refinery Dust	007440-02-0	A
Nickel Subsulfide	012035-72-2	A
Polychlorinated Biphenyls	001336-36-3	B2
Toxaphene	008001-35-2	B2

IT IS SO ORDERED.

Board Members J.D. Dumelle and B.S. Forcade concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 26th day of September, 1991 by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board