ILLINOIS POLLUTION CONTROL BOARD
October 5, 1982

IN THE MATTER OF:	)	
	)	R80-5
RACT II RULES,	)	
CHAPTER 2: AIR POLLUTION	)	

Final Rule. Second Notice.

PROPOSED OPINION OF THE BOARD (by I. Goodman):

I. General Introduction

A. Procedure

This proceeding is undertaken pursuant to the Board's authority in Section 10 of the Environmental Protection Act (Act) to adopt regulations to promote the purposes of the Title II of the Act. Those purposes include the restoration, maintenance and enhancement of the purity of the air and the assurance that the degree of control necessary to prevent pollution is given to all air contaminents (Section 8). It is also the purpose of Title II to avoid duplicative, overlapping or conflicting state and federal regulatory systems (Section 9.1). These regulations are designed both to improve and protect air quality in Illinois and to meet the requirements of the Federal Clean Air Act (CAA).

On April 3, 1980 the Board authorized for filing a proposal of the Illinois Environmental Protection Agency (Agency) to adopt certain regulations limiting emissions of volatile organic materials (VOM) from certain categories of sources in the state. Part of the proposal concerns refinements of similar rules adopted by the Board on July 12, 1979 in its proceedings R78-3 and -4, known as "RACT-I", and part concerns rules relating to other categories of sources (known as "RACT-II").

Six technical hearings were held in this proceeding in June and November of 1980. The Economic Impact Study (EcIS) entitled, "Effect of Ract II Environmental Controls in Illinois," (Doc. No. 81-28) was prepared by RCF, Inc. under contract with the Illinois Institute of Natural Resources and was received by the Board in August of 1981. Three eocnomic hearings were held in November of 1981.

The transcribed record of the hearings (totalling 2093 pages), 61 Exhibits (including the EcIS), and thirty-five public comments (received prior to January 4, 1982) were considered by the Board prior to the issuance of a proposed Board rule on this subject on

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The Board acknowledges the assistance of Patricia F. Sharkey as hearing officer and in the drafting of the Opinion and Order in this proceeding.

May 27, 1982. The proposed rule, which differed from the Agency proposal in many respects, was published in the Illinois Register on July 9, 1982 in accordance with Section 5.01(a) of the Illinois Administrative Procedure Act.

Twenty-five comments were received on the Board's proposed rule. In response to these comments, the proposed rule was modified in a number of respects. These modifications are addressed later in this Opinion.

B. The "RACT" Concept

"RACT" is an anacronym for the phrase "reasonably available control technology" as used in Part D of the CAA, 42 U.S.C. §7401, et seq. Section 172 of the CAA requires that State Implementation Plans, as a precondition for the construction or modification of any major stationary source in any non-attainment area, must provide for the achievement of "reasonable further progress" toward air quality goals, including such emission reductions from existing sources as may be achieved through the adoption of "reasonably available control technology." RACT is not defined in the Clean Air Act, however, USEPA rules (40 CFR 51.1(o)), general policy statements, and industry specific "Control Technology Guidelines" (CTG) describe Federal RACT requirements. In general, RACT is defined as control technology which is both technically available and economically reasonable for a particular industry.

In specific, USEPA has issued CTG's describing technology it considers to be "reasonably available" for specific categories of industrial activity. USEPA policy has been to approve state RACT regulations as meeting CAA requirements if they result in no more than a 5 percent deviation from the emission reductions which would be achieved by applying the CTG's verbatim. Any greater deviation from the CTG's must be supported by the particular needs of the state.

USEPA issued CTG's covering nine industrial categories in 1978. The Agency's 1980 proposal contained proposed controls for the following seven categories:

1. Graphic Arts - Rotogravure and Flexography
2. Petroleum Refinery Leaks
3. Surface Coating of Miscellaneous Metal Parts & Products
4. Petroleum Liquid Storage in External Floating Roof Tanks
5. Manufactured Synthesized Pharmaceutical Products
6. Manufactured Pneumatic Rubber Tires
7. Perchloroethylene Dry Cleaning Systems

Two other 1978 CTG categories, Gasoline Tank Trucks and Factory Surface Coating of Flatwood Paneling, were not included in the proposal and have not been considered in this rulemaking. Gasoline Tank Trucks are covered by existing Board rules. Factory Surface Coating of Flatwood Paneling is not focused on because no factories of this nature exist in Illinois at this time.

As drafted, these rules identify technology which is both practically available and economically reasonable for the Illinois industrial sources which are addressed by the 1978 Federal CTG's. To the extent that the technical requirements of these rules differ from those in the Federal CTG's, the Board believes these differences reflect the technical and economic limitations of the Illinois plants addressed.

II. Statewide Applicability of RACT II Controls

A. Introduction to the Issues

In 1979 the Board adopted RACT I on a statewide basis. In the RACT I Opinion the Board explained at some length the photochemical reaction process by which hazardous and other oxidants interact to form ozone, the importance of meteorological factors in this process, and the complex phenomena of urban scale, mesoscale, and synoptic scale ozone transport. (R78-2,3 Opinion; pp. 4-10.) The Board at that time concluded that the transport phenomena, the necessity of accommodating future growth, the equitable application of the rule, the interaction of RACT I rules with other regulations (e.g. "offsets" between sources 100 miles appart), and the general inaccuracy of modeling and prediction techniques all supported a decision that RACT I be applied to stationary sources throughout the state. (Ibid., pp. 8-10.)

The Agency's proposal for RACT II categories did not propose to change the policy adopted in RACT I. Rather the Agency supported continued statewide applicability with direct testimony presented by Mr. Steve Tamplin, Manager of the IEPA Air Quality Planning Section. (R. 837-849.) In support of statewide applicability of RACT II, Mr. Tamplin cited the transport of hydrocarbon emissions from rural and small urban attainment areas into non-attainment areas; the existence of high ozone levels in many rural, small town and small urban areas themselves; the desirability of retaining a margin for growth of new industries rather than allowing existing emission sources to emit up to the maximum limit; the avoidance of shifting regulatory requirements; the equitable treatment of industries across the state; and the conservation of petroleum resources. Mr. Tamplin concluded that "it is unlikely that the ozone NAAQS will be achieved in urban areas in Illinois... unless hydrocarbon emission levels in rural areas are reduced."

On the other hand, several representatives of the affected industries have urged that RACT II be adopted only for Non-attainment Areas. Under the most recently proposed redesignations, this would mean that industries in only eight counties in Illinois would fall within the purview of RACT II. In support of this position it is argued that the Federal Clean Air Act does not require that RACT controls be applied statewide; that "the effect of long-range transport from rural to urban areas is

insignificant;" that statewide application of the rule will not significantly reduce background ozone levels in non-attainment areas; that RACT II is not necessary to insure a margin for growth in attainment areas; that industry-wide inequities should not be a concern to the state if the industrial community supports the position; and, finally, that recent air quality monitoring indicates that statewide applicability is not necessary to achieve attainment in existing Non-attainment Areas.

B. Discussion of the Rule

1. Air Quality

The precise dynamics of hydrocarbon transport and ozone formation are not fully understood even by experts in this field. Thus it is difficult to say with precision how much and how far ozone is transported. Nonetheless, it is obvious that county lines do not create "pollution barriers." This is especially true for a pollutant such as ozone which is formed in a mixing zone far above the emission source and may travel anywhere from 5 to 1000 miles. Despite the admitted difficulty in quantifying the impact of transported hydrocarbons, ozone transport is an observed and documented phenomena in Illinois. (See R. 839-841; Opinion of the Board R78-3/4, pp. 6-8; 1982 SIP for Ozone and Carbon Monoxide, pp. III-16; 1981 Annual Air Quality Report.) For example, rural Macoupin County has few industrial VOM sources, and yet five violations of the 0.12 ppm primary health standard were monitored in Macoupin County in 1981. It is generally accepted that these violations are the result of emissions generated in the St. Louis Metropolitan Area and transported 30 to 80 miles to the Nilwood monitoring station. (See 1982 SIP Revision for Ozone and Carbon Monoxide, pp. III-16, 17.)

Macoupin County is an example of transport from an urban Non-attainment, area to a rural area. However, Illinois also has examples of transport from rural Attainment areas to suburban-small town Non-attainment areas. Notably, emissions from Will County are implicated in the Non-attainment problems experienced in DuPage County. Will County is proposed to be designated as Attainment although large refineries and other sources in Will County generate approximately 10,000 TPY of VOM which could be eliminated by RACT II controls. On the other hand, neighboring DuPage County, which is directly downwind from Will County, is proposed to be designated as Non-attainment although RACT II sources there generate less than 200 TPY. Clearly, transport of some scope is implicated in Non-attainment area problems in Illinois. From the location of the emission sources in these examples, there is also an indication that emissions generated in counties surrounding Non-attainment areas are the most likely to contribute to Non-attainment areas' problems. Thus, minimally, an effective ozone strategy must obtain emission reductions in the counties immediately surrounding Non-attainment counties as well as in Non-attainment counties themselves.

The Board is also persuaded that a long-term ozone strategy must address major RACT II emission sources all over the state. While 22 counties are currently designated as Non-attainment, Illinois EPA and U.S. EPA both propose, on the basis of recent data, that only eight counties be so designated in the immediate future. (See 47 FR 31588, July 21, 1982.) The 1981 Annual Air Quality Report, published by IEPA, and the new 1982 SIP data do document a recent decrease in ozone levels. However, both documents also point out that the summer meteorology in 1979, 1980, and 1981 are not as conducive to ozone formation and transport as the previous years (1977 and 1978) nor as the norm over the last twenty years. (Also see Econ. R. 272.) Furthermore, the Agency's proposed ozone strategy, submitted in the most recent SIP revision, assumed that RACT II controls would be applied statewide. This is consistent with the Agency's testimony that "the observed long-range transport phenomena must be accounted for in any comprehensive hydrocarbon control program designed to successfully deal with ambient ozone concentration in excess of the national standard." (R. 840-841.)

An additional factor which is not accounted for in the recent data is the fact that many Illinois industries have been operating below capacity during this period. For example, two major refineries have closed during this period. If reopened these refineries will emit over 30,000 TPY of hydrocarbons. Both refineries have requested that IEPA consider those emissions "banked" and available for future use. Also, in other regulatory proceedings pending before the Board (R81-16, R81-20), a number of industrial representatives have indicated that current production levels are down and have requested that a higher, "more representative" emission level be considered a norm for purposes of regulatory projections. In consideration of these facts, prudence dictates that we not be overly confident in the recent "trend." Even under the favorable recent conditions relatively high readings have been recorded in small town and small urban Attainment areas over the last three years (e.g. Springfield: .108, .106, .119, .113, .104; Peoria Heights: .121, .104, .111, .107; LaSalle: .127, .128; McHenry: .164). In fact on 72 of 153 days in the 1980 ozone season and 53 of 153 days in the 1981 ozone season, at least one Illinois city or area was placed on an ozone advisory. With a resurgence in the economy and/or a return to more "normal" meterology, areas such as Peoria may very likely be recording ozone levels violating the health standards in the future.

Given the fact that major VOM emission sources are scattered across the state and are in many instances located directly upwind from areas that have in the past and are likely in the future to experience ozone violations, the Board finds that a prudent long-term ozone strategy must include statewide application of RACT II controls.

The Board also notes that recent proposals to amend the Federal Motor Vehicle Control Program (FMVCP) suggest that it would be imprudent to rely on that program to insure maintenance of a margin for growth. Although one commentor argues that "current Clean Air Act Amendments" do not propose to relax hydrocarbon emissions from automobiles (P.C. #47), there has been no final Congressional action on proposed amendments to the Clean Air Act as of this date. Notably, the 1982 SIP states that Non-methane hydrocarbon emissions could rise by as much as 9% over the current program's 1987 projections if relaxations in the FMVCP which have been proposed are enacted. (See pp. X-4.)

Another consideration is that the shifting of regulatory requirements which would result if RACT were applied only in NAA is counter-productive to pollution control decision-making both in business and government. The long-range planning perspective necessary to make investments and plan growth is unlikely to benefit from the uncertainty added by a "wait and see" approach.

Absent a statewide approach, RACT II emission sources could increase emissions in a non-attainment area by using a credit from controlling a source in an attainment area. Notably, in the R81-20 proceeding, industry representatives supported a "bubble" rule which would allow emission sources to "bubble" VOM emissions over great distances (possibly the whole state) without regard to the attainment status of the areas involved. This argument was based on the existence of a transport phenomena. (R81-20; R. 578-579.) There is an inherent contradiction in allowing statewide VOM "bubbles," while not applying RACT statewide. There is also a danger that air quality in non-attainment areas will be harmed.

2. Economics

Several industrial representatives argue that it is less cost-efficient to control in clean areas than it is to control in dirty areas. They attempt to compare the cost of control measures to the environmental benefit or air quality improvement. While the Board generally agrees with this approach, in this case such a comparison can be made only in a simplistic and ultimately unrealistic fashion. To do so one must assume that emission reductions only benefit the county or immediate vicinity in which the emissions are generated. This is the approach taken in the EcIS. (See pp. 21-36; 155-157.) Under this type of analysis, it is self-evident that it will be difficult to measure the health or welfare improvement resulting from reduced ozone in attainment areas, since we begin with the assumption that these areas do not have acute or measured ozone problems even without RACT II. The obvious flaw in this analysis is that it attributes no "benefit" to controls applied in attainment counties for reductions in ozone which occur in neighboring or even distant counties. The authors of the EcIS may have misled the industrial representatives with regard to this point. The EcIS flatly states that

"possible long-range transport effects due to RACT II ozone reductions did not appear great enough . . . to warrant adjustment of the background level for long-range transport effects of RACT II." (EcIS pp. 33-34.) No technical documentation is given for this statement, and nothing else in the record of this proceeding would support it. In light of the sworn testimony of technical experts in this field and the observed effect of the transport phenomena on counties such as DuPage, Macoupin, and Monroe, and the "ozone sink" phenomena in Will County, this assumption by the economists who drafted the EcIS is disturbing. The fact is that experts in the field agree that the data does not exist at this time which will enable us to quantify the impact and thus the benefit of hydrocarbon reductions generated in one county on another county. However, as stated earlier, it is clear that the impact in some instances is quite significant. A realistic cost-benefit analysis of RACT II based on air quality improvement would have to account for the "real world" complexity of ozone transport and formation. Unfortunately, at this time this type of analysis is impossible to make.

In the absence of the data necessary to perform a useful air quality cost-benefit analysis for RACT II, the next best approach is to analyze the cost-benefit of RACT II controls on a dollar-per-ton of reduction basis. This is the basic approach taken in the EcIS. On a dollar-per-ton basis, the cost of controls within a given category is generally the same regardless of where the source is located. (See EcIS, Table I, p. xii; Table 3.2, p. 66; p. 95.)

From the perspective of the quantity of hydrocarbon emissions generated throughout the state, attainment areas are by no means insignificant emitters. Attainment areas generate approximately one-third of the RACT II VOM emissions in the state. In fact, in some categories, the largest VOM emitters in the state are located in attainment areas. (See, for example, the Petroleum Refinery categories and the Rotogravure and Flexography category.) Calculations made from the emission source data in the record indicate that approximately half of the emission reductions which can be achieved by RACT II controls will come from attainment areas. Thus, approximately one-half of the emission reduction benefit for the whole state is derived from attainment areas, and, within given categories, actually a greater benefit can be obtained from emission sources located in attainment areas than from those located in non-attainment areas.

There is no basis in the record for concluding that Illinois industries will be at a competitive disadvantage vis-a-vis industries located in states which have adopted RACT only in NAA. In fact, the major industrial states of California, New Jersey, Massachusetts, South Carolina, Michigan, Ohio, and Pennsylvania have all adopted RACT controls on a statewide basis. (R. 847.) On the contrary, a competitive disadvantage will accrue to Illinois industries located in NAA vis-a-vis Illinois industries

located outside NAA if RACT is not applied statewide. The competitive disadvantage would be increased for businesses in NAA's in that various exemptions and extensions for industries in RACT II categories would have to be eliminated to accommodate for increased pollutant background levels. These Illinois industries would not only be at a competitive disadvantage vis-a-vis their counterparts elsewhere, but also with their direct competitors in neighboring counties.

One commentor (P.C. #47) states that "the question of equity should not be an issue in this proceeding," since several large industrial and manufacturing associations support application of the rules only in NAA's. The Board disagrees with this statement. The equitable application of regulatory burdens across similarly situated businesses is an appropriate concern in the development of state policy. The Board notes that the recently enacted Illinois Regulatory Flexibility Act specifically charges state agencies with a responsibility for insuring that regulatory burdens do not fall disproportionately on the traditionally under-represented small business community. Emission reductions which can be obtained by application of RACT to large emission sources in both attainment and non-attainment areas provide the flexibility to allow greater exemption levels and deviations from the CTG requirements for smaller sources in both NAA and AA. Absent these reductions from the large emitters in AA's, small businesses in NAA's, their employees, and the communities in which they are located will bear a greater burden although they produce a smaller increment of pollution.

Putting the question of equity aside, the Board notes that the final rule has been modified in numerous respects to meet the concerns expressed by industry representatives. As the rule is currently drafted, the economic consequences are not unreasonable for industries located in any part of the state. In most instances, the equipment required will pay for itself within 3-5 years due to the recovery of expensive solvents. In at least two of the six categories, the savings generated by conserving petroleum products significantly outweigh the cost of the program or equipment requirements. (See EcIS p. xii.) If there are unique cases of economic hardship, the Board can and will consider these within the context of a variance proceeding.

3. "Phased Approach" to Statewide Applicability

Having stated that long-term ozone strategy must address emissions generated across the state, the Board nonetheless finds that the current downturn in production and emissions enables the state to devise a more lenient short-term ozone strategy, without jeopardizing air quality. The regulations as drafted embody a "phased approach" which will achieve both the short-term and long-term goals. (See Rule 205(j).) Under this "phased approach" RACT II industries located in those

counties which are currently proposed to be designated as Non-Attainment by U.S. EPA and the counties which are contiguous to those Non-Attainment counties will generally be required to comply with RACT II requirements before December 31, 1983. Industries in all other counties will have the option of complying with the requirements at a later date, but in no case later than December 31, 1987. The time-frames for submittal of compliance plans have also been adjusted for these counties. If another county is designated as Non-Attainment after the date of this rule, industries in that county and any counties contiguous to that county will have one year from the date of redesignation to come into compliance. However, future redesignations of Non-Attainment areas as Attainment or unclassified will not trigger a RACT II relaxation since the air quality improvement is likely to be linked to those very controls.

The two "phases" of this approach correspond in both time and place to the short-term and long-term ozone picture. In the short-term, emission sources in and directly around Non-Attainment areas will be controlled as soon as is feasible. By December 31, 1983, 49,250 TPY or 65% of the predicted statewide RACT II reductions will be achieved by the deadlines in the Board's proposed rule. (See Rule 205(j)(1).) In light of the fact that emissions are down all over the state, this level of reduction should insure that ozone problems in the proposed Non-Attainment areas will be alleviated at least for the short-term. At the same time, economically depressed industries in other parts of the state will be able to defer change-over costs until a somewhat later date.

The longer-term, statewide perspective envisions emissions and production picking up over the next few years, coupled with new industrial growth and a return to normal weather patterns, resulting in a greater probability of ozone problems in both the proposed Non-Attainment areas and other "borderline" problem counties in other parts of the state (e.g., the Peoria, Rockford, and Decatur-Springfield Metropolitan Areas). To insure against higher future ozone levels, the regulations will be applicable to industries across the state by a date certain. The provision of the 1987 deadline, rather than deferring rulemaking with regard to these counties, is designed to demonstrate the Board's firm commitment to the statewide approach and to enable the affected industries to begin planning their RACT II control strategies immediately. It is anticipated that many companies will find it preferable to change over to low solvent technologies before the 1987 date. The certain knowledge that neighboring competitors will also be required to switch to low solvent technologies in the near future should make these change-overs more palatable and should spur business planning rather than delay it. The Board notes that companies or entire industries which take a "wait and see" approach rather than planning for compliance do so at their own risk.

III. Proposal to Exempt Particular Solvents

On May 30, 1980 De Soto, Inc., Midland Division, the Dexter Corp., and International Harvester Co. petitioned the Board to amend the definition of Volatile Organic Matter (VOM) by adding 1,1,1 - Trichloroethane and Methylene Chloride to the list of solvents which are exempt from the definition of VOM. (Ex. 31; P.C. 3.) The Board consolidated this proposal with the R80-5 proceeding because these solvents can be a compliance alternative for some surface coating operations.

There is considerable debate in the record on the exemption of these solvents. Participants and commentors generally agree that these solvents do not appreciably contribute to ozone formation and are only negligibly photochemically reactive. Thus, it is agreed that it is inappropriate to regulate them as ozone precursors. However, there was disagreement as to other health effects that may be caused by these solvents and as to their contribution to depletion of the stratospheric ozone layer (6 miles above the earth). (R. 701-751; 409-425; 1401-1446.) These identical issues were considered in the RACT I proceeding in which the Board decided that an exemption was unwarranted due to the fact that these solvents had not been well tested for their toxicological properties. (R. 79-3,4, Opinion of the Board, pp. 11-13.)

Although the record in this proceeding reflects some new research on this issue (as well as much of the research considered in RACT I), the evidence on toxicological effects and stratospheric ozone depletion accumulated in this proceeding is far from exhaustive or conclusive. For example, the record contains no testimony from qualified toxicologists or M.D.'s. The weakness of the record on this issue is partially the result of the fact that very little research exists on these solvents and partially the result of the fact that the other RACT II issues are of a very different nature. Due to the insufficiency of the record on the alleged toxicological characteristics of these solvents and of their effect on stratospheric ozone, the Board believes it would be imprudent to rule on these issues in this proceeding. However, without deciding these issues, the Board does find that it is inappropriate to regulate these substances as "volatile organic material" under Rule 205 because the function of Rule 205 is to regulate ozone precursors and it has been demonstrated that these solvents are not ozone precursors. Thus, these rules exempt these solvents from the definition of "Volatile Organic Material" in Rule 201.

It should be noted, however, that this exemption does not preclude future regulation of these substances as hazardous air pollutants. In its comments IEPA asks (perhaps rhetorically) why the Board does not regulate these and other possibly more dangerous substances as hazardous air pollutants. (P.C. #50, p. 6.) The response to that question is simply that neither the IEPA nor anyone else has presented such a proposal. Given such a proposal and adequate technical documentation, Illinois might

very well decide to regulate these and other solvents under Part X of the Board's Chapter 2: Air Pollution Regulations (which is entitled Emission Standards for Hazardous Air Pollutants). Thus, businesses which choose to utilize these solvents as a RACT II compliance alternative do so at the risk that they may be subject to other regulations in the future.

IV. Rotogravure and Flexography - Rule 205(s)

A. Introduction to the Issues

In the "Graphic Arts - Rotogravure and Flexography" category, emission reductions can be achieved by 1) adding on a carbon adsorption control system, 2) adding on an incineration control system, or 3) switching to low solvent inks. The proposed rule provides that use of any of these three alternatives will constitute RACT provided that certain reduction efficiencies are achieved.

The use of low solvent inks which are either water borne or high solids is the preferred technology because it is the least material and energy intensive, as well as the least expensive, alternative. However, water borne inks which are currently available do not meet all printing requirements. The USEPA CTG for this category indicates that water borne inks are used extensively for printing on heavy paper materials, but are not used on thin paper stock because the higher water content weakens the paper. (Ex. 9, p. 3-9.) To encourage development of more widely usable low solvent inks, USEPA has indicated that they will accept an extension of the compliance date beyond December 31, 1982 for sources which are making good faith efforts to develop low solvent ink systems. (Rhoad's Memo, Group Ex. 20.) The Flexible Packaging Association of Illinois testified that with this compliance date extension, their members should be able to bring low solvent inks on line. (R. 279.)

The USEPA CTG and the IEPA proposal recommended that printing presses using water borne inks consisting of 75% or more of water and 25% or less of organic solvent by volume should be considered RACT. At these volumes, emission reductions equivalent to those expected from the add-on treatment system should be achieved. USEPA and IEPA also recommend that inks which contain 60% or more non-volatile material be considered RACT in order to encourage development of high solids inks.

The CTG states that carbon adsorption and incineration systems have a reduction efficiency of 90% of the VOC delivered to them. However, the efficiency of the capture systems, such as hooding, which are required to deliver the emissions to the adsorber or incinerator, varies with the type of printing operation. Reported combined capture and reduction efficiencies for publication rotogravure plants have been 75% or more. (CTG, Ex. 9, p. 1-2.) Large packaging rotogravure presses are expected to

have less capture efficiency due to the fact that they generally have shorter runs, a greater variety of solvents, and more dilute solutions. (R. 782.) An overall control efficiency of approximately 65% is specified in the CTG for these presses. (CTG, Ex. 9, p. 1-2, R.999, 1014-15.) However, a representative from the packaging rotogravure industry commented that it is impossible to either achieve or measure specified capture efficiencies for packaging in rotogravure presses. Due to the construction of flexographic presses, effective hooding and ducting is difficult to construct. Therefore, a lower overall control of efficiency of 60% is considered to be RACT for flexographic presses. (CTG, Ex. 9, p. 1-3.)

Although the retro-fit systems are generally technologically available, they may not be economically reasonable in all cases. The cost effectiveness of both systems depends on the amount of ink used by the source and the VOC concentration by volume in the emissions gas stream. For example, witnesses testified that both incineration and carbon adsorption systems are expensive for packaging rotogravure presses which are characterized by short runs, dilute levels of solvent, and varied solvent mixtures. Carbon adsorption systems are considered more cost effective for publication rotogravure than incineration due to lower operating costs and the fact that solvent can be recovered for reuse with this system. USEPA found that a carbon adsorber used by a publication rotogravure press will have a negative annualized cost if a plant uses at least 7,720 tons of ink paper per year at a VOC concentration of 2,400 ppm. At 3,860 TPY, the same plant would spend only 63 cents per ton for the carbon adsorption system reductions. (CTG, Ex. 9, Table 4-10.)

USEPA recommends that plants emitting less than 100 TPY of VOM be exempt from RACT requirements. (R. 132, CTG, Ex. 9, Fig. 4-4, 4-5.) This exemption level is based on the drastic reduction in cost effectiveness per ton of emissions for plants emitting less than 100 TPY. However, the Agency proposed an exemption for facilities emitting less than 1000 TPY uncontrolled emissions of VOM when averaged over the three preceding calendar years. The Agency provides data from the emission inventory which indicates that an exemption at this level will yield 95.9% of all emission reductions possible in this category in Illinois. (R. 164.) IEPA argues that this variation from the USEPA guidance should be acceptable to USEPA because it is within the "5% deviation rule."

The economic impact study (EcIS) focused on costs for the four companies which would be subject to additional controls if the 1000 TPY exemption were utilized. Two of these are packaging rotogravure and two are publication rotogravure. The EcIS compared company-provided cost estimates based on retrofitting. However, the larger of the packaging rotogravure firms indicated it could convert to low solvent inks if it were given a compliance date extension beyond 1982. Although the EcIS does not provide cost estimates for conversion to low solvent inks, the Agency's

economic study found this to be the most economical alternative in the long run due to the fact that low solvent inks are less expensive than high solvent inks and minimal retrofitting would be required. For publication rotogravure, one company indicated that it is currently operating one carbon adsorber and plans to put four more on line. The company indicated that the expected payback period based on recovered solvents is three years. (EcIS, p. 44; P.C. 18.)

The EcIS found a cost effectiveness of $27.50 TPY for publication rotogravure (carbon adsorption) and $283.20 TPY for packaging rotogravure (incineration). The combined cost efficiency was estimated to be $116.7 TPY for retrofitting in this category. As noted, costs and savings associated with conversion to low solvent inks were not quantified and are expected to be lower.

The Printing Industry of Illinois Association stated that the IEPA's proposal is "basically an excellent document." The Flexible Packaging Association stated that the proposal was "reasonable" within the meaning of the Clean Air Act. However, the associations requested the following revisions: 1) a clarification that "proof presses" are not covered by RACT requirements; 2) a rewording of Section 205(s)(1)(B) to avoid confusion; 3) the provision of an optional compliance date extension for companies committing to conversion to low solvent inks; and 4) the provision of a "bubble" option.

B. Discussion of Rule

Rule 205(m)(b) allows an extension of the compliance date up to 1987 consistent with the conditions specified in the rule which generally reflect the Rhoad's Memo. This provision is included in the rule as an incentive for the development of low solvent ink technology and also to avoid the submission of numerous duplicative variance petitions.

Rule 205(s)(1)(C) and (D) utilize the control and capture efficiencies proposed by the Agency. However, as stated above, the technical achievability of the proposed 65% capture efficiency for packaging rotogravure was questioned by one company. To address the concerns expressed by this company (P.C. #42) Rule 205(s)(1)(D)(iii) has been modified to state that the overall reduction achieved must be at least 65% or "the maximum reduction achievable using good engineering design."

Rule 205(s)(2) utilizes the 1000 TPY exemption proposed by the Agency. This exemption is justified by the fact that in Illinois this industry is characterized by large plants which make up the bulk (95.9%) of the available emission reductions. (R. 1000-1005.) Regulation of smaller businesses for which the purchase of retrofit equipment or the experimentation with low

solvent inks is far less cost efficient is not justified at this time.

The Board notes that the Agency proposal used the term "facility," but did not define this term. The Board proposal used the term "press" to achieve consistency. However, applying the exemption to any "press" emitting less than 1000 TPY unacceptably enlarged the exemption. To remedy this the Rule, as presently drafted, again uses the term "facility" but clarifies that it includes the aggregate, uncontrolled emissions from rotogravure and/or flexographic printing presses only. Notably, emissions from "proof presses" are excluded from facility emissions under this definition.

Several witnesses expressed interest in utilizing a "bubble" approach to achieve emission reductions equivalent to those achievable utilizing the specific technology prescribed by this rule. The Board notes that the provisions of the recently adopted Chapter 2, Part 212, Alternative Control Strategy rules will allow an owner or operator of a press subject to this rule to demonstrate the equivalency of an alternative approach.

V. Leaks from Petroleum Refinery Equipment - Rule 205(e)

A. Introduction to the Issues

In the "Leaks from Petroleum Refinery Equipment" category, an inspection and maintenance program can both reduce VOM emissions and save petroleum. The emission reduction expected from application of the Agency proposal was approximately 31,000 TPY. This is the largest single category of emission reductions addressed by the RACT regulations, as well as the most cost efficient to control. The Economic Impact Study found that the estimated savings of crude oil to refineries in Illinois more than offset the cost of the inspection and maintenance program proposed by these regulations. While the Agency and the EcIS used a 90.2% control efficiency in calculating reductions expected from inspection and maintenance, the authors of the EcIS found that the level of control efficiency at which petroleum savings equals annual control costs is only 19.4%. Therefore, the implementation of such a program is certainly economically reasonable.

However, cost effectiveness does vary component by component. For example, a model refinery is presumed to have 100,000 leaks. Seventy-five percent of these leaks are presumed to be attributable to pipeline valves, while only 5% are attributable to pump seals. However, the Illinois Petroleum Council (IPC) testified that 63% of the maintenance costs are associated with monitoring pump seals. Among other things, the Petroleum Council proposed an exemption for components in heavy liquid service, an exemption for pump seals and flanges, an exemption for gas streams containing less than 30% VOM, monitoring only during the ozone season, deletion of the

reporting requirements, and a reduction in the monitoring periods. (See R. 621-635.)

B. Discussion of Rule

The Board rule reflects a number of the concerns expressed by the IPC, yet retains the bulk of the emission reductions predicted to be available from this category during the ozone season.

First, the definition of "component" in Rule 201 specifies particular components but also retains the phrase "but not limited to" in order to insure that any leaking piece of equipment will be monitored, reported, and repaired. The language has been amended, however, to specifically exclude all "equipment" in "heavy liquid service." The rationale for excluding valves in heavy liquid service, as originally proposed, applies equally to other components, that is, liquids with very low vapor pressures do not evaporate and leak in significant amounts. To clear up an ambiguity raised in the comments, the Board notes that all valves which are not externally regulated and all flanges are excluded from the definition of component.

The proper definition of "Heavy Liquid" was debated in the record. The record revealed some ambiguity as to whether the Agency was proposing a maximum vapor pressure of 0.011 or 0.11 at 70°F. The IPC argued that the 0.011 at 70°F was unreasonable, and could not be conveniently translated into current refinery test practices which use Reid vapor pressure. The IPC proposed 0.1 Reid vapor pressure which translates into a true vapor pressure of 0.04 psia at 70°F. In a supplemental comment, the Agency concurred in this proposal. A review of the vapor pressures of various petroleum products indicates that this change would not enlarge the category of products considered to be in heavy liquid service, and that it would properly distinguish products with very low rates of emission. Therefore, the Board rule utilizes the true vapor pressure of 0.04 psia at 70°F. In addition, a boiling point criteria has been added in response to comments and to insure consistency with the federal definition.

Rule 205(l)(4) contains a general statement of the requirements applicable to petroleum refineries. The information to be contained in the monitoring program plan is specified in Rule 205(l)(5). Notably, rather than the tagging requirement for leaking components, Rule 205(l)(5) provides the more flexible requirement that the plan include a description of the method used to identify various components, including all leaking components. Some commenters (P.C. 49 and 54) interpreted the word "mark," which was used in First Notice proposal, to mean that a visible sign would have to be posted with the component. To clarify this the term "mark" has been replaced with "identify." Any method of identifying components which will provide both refinery and Agency personnel with the ability to easily inspect, monitor, and repair components will meet this requirement.

Rule 205(l)(5)(A), as proposed, required that the plan contain a list of all refinery components. Two commenters stated that the requirement of a list is abstract, burdensome and will inhibit flexibility (P.C. #49 and #54.) To avoid placing any unnecessary burden on the industry, the term "list" has been changed to "identification." It should be noted that such identification might be made on a blueprint or inspection form rather than as a separate listing. However, the "identification" must be of "components," not simply "process units." The Board disagrees that the focus on "components" is abstract. On the contrary, the definition of "component" in Rule 201 is quite explicit and detailed. Since the "component" is the unit which must be monitored and repaired, it is essential to be able to individually identify and track its leak history. The Board also disagrees that this requirement will make the plan overly inflexible. Modifications to the equipment may require an occasional updating of the plan, but it need not require the resubmittal of the entire plan for the plant. Lastly, although identifying 20,000 or more components in the initial plan may require several days or even weeks to prepare, the Board disagrees that this is an unreasonable requirement. First, preparation of the plan is a one-time effort. Second, identification of the components to be monitored is essential to both the implementation and enforcement of a comprehensive inspection and maintenance program.

The monitoring program (Rule 205(l)(6)) requires monitoring only twice a year, before and during the ozone season, as opposed to the quarterly monitoring proposed in the Federal CTG's and the Agency proposal. The limitation to the ozone season is justified by the fact that outdoor inspection and maintenance of this equipment is particularly difficult in the winter in Illinois and emissions during the colder winter months do not pose an ozone threat in Illinois and the Northeastern United States.

As proposed for First Notice, Rule 205(l)(6)(A)(i) and (ii) required that various components be tested prior to May 1st of each year and that a subset of those components be retested prior to August 1st of each year. Several commenters stated that the May 1st deadline would be inconvenient due to the numerous components to be tested, the cold weather in the early spring, various labor-management constraints, and the timing of process unit turnarounds. (See P.C. #33, #49, #54.) The IPC proposed that the dates by which monitoring must be completed be changed to June 20 and September 30. IPC argues that this will not adversely affect air quality because no violations of the 0.12 standard, i.e., <u>two</u> excursions of the standard constitute a violation, occurred during May of the last three years and only six violations occurred in June over the last three years. However, the data presented, in fact, demonstrates that in some areas the highest readings recorded all year were recorded in May and June. In one instance, an exceedance of 0.124 occurred in late May and in 22 instances the first or second highest reading of the year occurred in May or June.

The Board notes that other Chapter 2 regulations set April 1 to November 1 as the parameters of the "ozone season." The May 1 date (rather than April 1) was used in the First Notice proposal to accommodate the concerns expressed in the record by the IPC about cold weather and the length of time needed to perform the monitoring. It should be noted that using the May 1 date, repairs and retesting would not be required to be completed until as late as May 22.

Given the severe weather that can be experienced in Illinois in March and April, and the relatively low incidence of high ozone readings in May, the Board is persuaded that the May 1 date can safely be changed to June 1, but cannot be pushed back to June 30 as requested by the IPC. However, the Board will require that repair and retesting be completed by June 1 as well. From the IPC's comments, it appears that this can be accomplished. In addition, the rule has been changed to provide that the reports may be submitted to the Agency 30 days after monitoring is completed to provide more time for careful preparation of the report. The rule also states that monitoring to satisfy Rule 205(l)(6)(A)(i) and (ii) may not be performed before certain dates. This is designed to insure that the monitoring, testing and repair is performed at a time when it will provide the greatest assurance of preventing leaks. The August 1 date has been retained because fewer components will be checked at that time and because August represents the most critical ozone period.

To insure that problem components receive the attention necessary to minimize leaking, Rule 205(l)(6)(C) authorizes the Agency to require more frequent monitoring for components which have been documented as having a history of leaking. The burden of proving such a history has been documented will be on the Agency.

The Board recognizes that experience gained in carrying out the monitoring program should enable owners and operators to distinguish more and less frequent leakers. Thus, it is desirable to have flexibility in the rules to adapt the monitoring, record-keeping and reporting requirements to the needs of each refinery. Rule 205(l)(9) provides this flexibility if the owner or operator can demonstrate that an alternative program will provide an equivalent inspection and maintenance capability. This mechanism resembles a "bubble" approach to refinery leaks, however, use of the recently adopted Chapter 2 Alternative Control Strategy Rules would be an unsually complicated approach to "netting" the thousands of small refinery leaks. The "equivalency" demonstration required by this specialized rule is the equivalency of the ability to identify and repair leaks, rather than an equivalency of emissions, which would be extremely burdensome to quantify.

The Rule does not include an exemption for gaseous streams containing less than 30% VOM as proposed by the IPC. Notably, the Radian Study indicates that an 85-95% emission reduction can be achieved by controlling components in hydrogen service. Also, no accurate count of the number of units affected nor the particular hardship involved in monitoring these units was given in the record.

On a related issue, the Agency proposal amended the definition of VOM to eliminate the specialized definition of VOM adopted for Rule 205(l)(l-3) in the RACT I proceeding. Nothing in the Statement of Reasons or the record explains the purpose of this amendment, therefore, it appears to have been an inadvertent omission and the 1.5 psia definition applicable to those RACT I categories has been retained.

VI. Surface Coating of Miscellaneous Parts

A. Introduction to the Issues

The Federal CTG for this category encompasses a wide variety of metal products such as combines, tractors, lawn mowers, mixers, typewriters, pumps, fans and metal door frames. Nearly all manufactured metal parts and products not presently covered by Rule 205(n) (RACT I) are included under the new proposed rule. Although 268 Illinois companies fall within the SIC categories subject to this CTG, those that emit less than 25 tons per year are exempt under existing Rule 205(n)(3). With this exception, 145 companies are potentially affected.

USEPA has recognized six applicable control technologies for the surface coating of miscellaneous metals: water-borne coatings without electro-deposition, water-borne coatings with electro deposition, higher solids coatings, powder coatings, the use of a carbon adsorber, and the use of an afterburner. The total uncontrolled emissions from Illinois companies in this category is 33,870 tons per year. By application of the Agency proposal, IEPA predicted that emissions could be reduced by 24,494 tons.

The Agency proposed a single set of compliance paint specifications for the Miscellaneous Metals category in general. However, there was a great deal of debate in the record as to the applicability of these paints to the specialized requirements of heavy-duty, off-road vehicles, such as tractors and trains, and to outboard marine equipment. Both the size and endurance requirements of this equipment create special problems. Extensive testimony was offered at the hearings by Illinois manufacturers on the lack of proof of the commercial availability of water-based, high-solids and powder coatings for their products. All of these companies have run tests and found varying degrees of success in the application of various compliance paints. Chipping and running of the paints were experienced in some trial runs. Because of the size of the equipment involved and the Illinois climate, prolonged air drying times or the need to construct giant dryers and warehouse drying space for water-based paints is considered prohibitively expensive. Although one paint company and the Agency argued that compliance paints have been successfully tested and are available, these arguments were based on a limited number of trial runs and even fewer instances of actual production use for this type of equipment. (R. 1054-99.)

Several manufacturers proposed both in testimony and in comments that a separate category be established for these off-road, heavy-duty vehicles for which higher solvent coatings would be accepted as RACT. (R. 349-50; P.C. 39, 41, 44, 82.) A recent USEPA policy statement (Exhibit 55) generally supports this request by recognizing that the CTG prescribed compliance paints have not yet been fully commercialized for automobile top coat operations and recommending postponing final compliance dates to the end of 1986 to encourage development of high solids and water-borne coating development. The problems experienced with the automobile coatings are similar to those faced by the heavy-duty, off-road vehicle product industries.

Another manufacturer testified that some of their products, which include marine propulsion devices and off-shore drilling equipment, are subject to unique salt-water and corrosive environments which make it impossible to meet either the general or extreme performance coatings specifications. (R. 304-332.) A witness representing a major paint supplier confirmed that for the "very specialized high temperature resistant coatings" required for outboard marine products there is "no possibility of any high temperature coatings technology coming to bear, at least in the next eight to ten years." (R. 1094-5.) The manufacturer also argued that the exemption proposed by the Agency and USEPA for this category, "the exterior of marine vessels," was ambiguous with regard to the "exposed propulsion equipment" which they manufacture.

Although improved transfer efficiency is recognized as a means of reducing emissions, neither the U.S. EPA CTG nor the Agency proposal define RACT for upgraded transfer efficiency. Several public comments (P.C. 44, 45) suggest that at least a "norm" for transfer efficiency should be defined in the rules in order to simplify use of improved transfer efficiency in alternative control strategies. The Agency's Technical Support Document states that a company considering such a strategy would have the opportunity to demonstrate that their system provided equivalent control under existing Rule 205(n)(2)(B). Under Existing Rule 205(n)(5)(B), transfer efficiency is to be determined by methods, procedures or standards approved by USEPA or the Agency.

In addition, testimony was received, largely from paint suppliers, indicating that paints using the solvents 1,1,1 trichloroethane and dichloromethane would provide a compliance alternative for certain surface coaters in the Miscellaneous Metals category.

The Economic Impact Study predicted that the costs of compliance with the Agency proposal for this category range between $1,434.7 per ton in Non-attainment counties to $1,032.0 per ton in Attainment counties. (See EcIS, p. 66, Table 3.12.) The costs are based on 93% of the affected sources switching to high-solids or water-borne coatings and 7% retrofitting with incineration units. The EcIS notes that 41.4% of the total annual costs are associated

with incineration and that this cost will be lower if the two non-exempt solvents are made available to companies which cannot use other compliance coatings. Exemptions, changes, and deferred compliance plans and dates provided in the Board rule are also not reflected in the EcIS figures and would significantly reduce the projected costs.

B. Discussion of Rule

In response to the evidence presented by several Illinois industries and comments received in the First Notice period as to the non-availability of the compliance options contained in the Agency proposal for the manufacture and repair of a variety of heavy-duty, off-highway products, a separate category has been created for these coating lines. This new category, "Heavy Off-Road Vehicle Products," is defined in Rule 201 and compliance coating specifications are listed in Rule 205(n)(1)(K). In addition, based on evidence in the record and USEPA findings that extreme performance top coats for air-dried coating lines will not come on line for production uses until the end of 1986, the rule is drafted to allow the final compliance date for these particular coating lines to be extended to no later than December 31, 1986 if the requirements of Rule 205(m)(5) are met. Other coating lines in the Miscellaneous Metals category must comply with the compliance date in Rule 205(j), that is, December 31, 1983.

Comments received during the First Notice period (P.C. 44, 45) indicate that there is some ambiguity as to whether "transfer efficiency" may be used to demonstrate control efficiencies equivalent to the Rule 205(n)(1) coating limitations or to the Rule 205(n)(2)(A) afterburner system. The difficulty in stating that increased transfer efficiency can be balanced against higher solvent content is that no RACT norm has been prescribed for transfer efficiency. Without an established "baseline," so to speak, the Agency believes the appropriateness of using improved transfer efficiency should be judged on a case-by-case basis. Given the lack of substantive data in the record on transfer efficiency, the Board must agree with this position, and therefore declines to specify a particular transfer efficiency or that transfer efficiency will always be an acceptable alternative. However, this should not mean that the company would necessarily have to improve its transfer system, since a company may already be using a transfer system that surpasses the norm for the industry. Using its existing superior transfer system, the company may be able to use higher solvent paints and still achieve the emission reduction which another plant could only achieve by using a compliance paint.

In response to testimony on the lack of availability in the foreseeable future of compliance coatings for either "the exterior of marine vessels" or "marine propulsion equipment," these particular surface coating operations are exempted from the definition of Miscellaneous Metal Parts and Products in Rule 201. Although

the Agency testified that further definition of the term "exterior of marine vessel" would be a preferable approach, no such definition was proposed. The explicit reference to propulsion equipment is added to minimize the ambiguity on this term.

Several comments were received in the First Notice period concerning specialized paint requirements for a variety of other coating operations, e.g., steel pail and drum coating, automotive air conditioners, etc. (See P.C. 40, 58, 59.) It appears that the problems experienced by these industries do not involve the size and endurance problems associated with other industries, which are exempted or handled separately in the rule. Due to the variety of operations involved and the limited amount of information in this record on each operation, it is impossible to write a rule or even several rules which will address all of these circumstances. Rather, the particular problems raised by these commentors may appropriately be raised in a petition for variance from the general rule. It should be noted that it is unnecessary to include a special variance provision in these regulations because both the Illinois Environmental Protection Act and the Board's Procedural Rules currently provide this avenue of relief.

Contrary to the concern expressed by some witnesses and commentors, the Board notes that there is no conflict between Rule 205(f) and 205(n)(1). Existing Rule 205(n)(6) states that "no coating line subject to 205(n)(1) is required to meet 205(f) after the date by which the coating line is required to meet 205(n)(1)." No legitimate purpose is served by generally invalidating the application of Rule 205(f) prior to the time that a source comes into compliance with Rule 205(n)(1). Special hardship, test runs, etc. that cause a source to have trouble complying with Rule 205(f) prior to the 205(n)(1) compliance dates may appropriately be addressed by filing a variance petition with the Board.

The Board also notes that the exemption of the 1,1,1 trichloroethane and methylene chloride, the relaxed standards and compliance dates for Large, Heavy-Duty Equipment, the opportunity to develop alternative control strategies, and the deferred compliance dates for non-contiguous Attainment counties will reduce the economic impact of the regulation on industries in this category significantly.

VII. Petroleum Liquid Storage in External Floating Roof Tanks

A. Introduction to the Issues

Existing Rule 205(a)(2)(A) requires petroleum storage tanks in Illinois equipped with floating roofs to use a "primary seal" around the rim to close the space between the roof edge and tank wall. The CTG and the Agency proposal recommend retrofitting

these roofs with an additional "secondary seal" to reduce wind-induced evaporation as RACT. For tanks containing gasoline, secondary seals have been shown to provide a 97.8% control efficiency. An IPC survey identified 362 tanks which would require retrofitting under this rule. (R. 609, Also see Ex. 26.) The total uncontrolled emissions from this category are 17,300 TPY. The Agency predicted their proposal would reduce emissions by 77%.

Existing Rule 205(o)(3) generally prescribes requirements applicable to all petroleum storage tanks. The Agency proposal, as amended, recommended a "clean-up" of Rule 205(a)(3)(A) and the addition of Rule 205(a)(3)(C) containing additional specialized requirements for external floating roofs, including a secondary seal, "gap" limitations, and semi-annual inspections. New Rule 205(a)(3)(D) provides exemptions to Rule 205(o)(3)(C) for certain types of tanks equipped with alternative control devices and for tanks used to store waxy, heavy pour crude oil.

Although retrofitting petroleum storage tanks is technically achievable, technical debate in the record focused on the efficiency of the secondary seal requirements for certain petroleums, the equivalence of other seals, and the feasibility of maintaining zero gap between the tank and the seal.

The IPC argued that deposition on the tank wall in tanks containing waxy, heavy pour crude oil would render a secondary seal inoperative (Ex. 29A and B, R. 685-687.) The IPC presented extensive evidence on parameters of waxy, heavy crude oils which were not contained in the Agency proposal. The Agency proposal focused only on crude oils with a "pour point" of 50°F. IPC recommended a "pour point" of 10° F, a paraffin content test, and a viscosity test all be available as alternative tests for identifying crude oils which form waxy, heavy deposits. The evidence presented by the IPC was not rebutted and thus the Board presumes that the rationale for exempting crudes which leave a deposit on the tank wall also applies to crudes identified by these additional tests.

The IPC also argued that the equivalency of various other seals should be defined as RACT by the Board. The Agency responded that they have identified several equivalent seals and that Rule 205(o)(3)(D)(iii) will provide them with an opportunity to review and approve additional seals.

Industry testified that "zero gap" is not achievable on a continuous basis, and that generally a 1/8 inch gap for 95% of the circumference and 1/2 inch gap for the remaining 5% should be considered RACT in order to avoid recurring technical violations of the standard. The Agency proposal would allow an accumulated area of gaps exceeding 1/8 inch in width equal to 1.0 inch^2 per foot of tank diameter.

IPC also argued that the semi-annual inspection was not

required by the Federal CTG and that annual inspections were existing industry practice.

The Agency and the IPC concur that the retrofitting costs per tank are approximately $20,625. (R. 609.) The Economic Impact Study found a somewhat higher capital cost plus annual control costs of $5,900. However, the Economic Impact Study orginally also found that there would be an annual petroleum credit from saving 5 million gallons of gasoline annually which would totally off-set all costs associated with the Agency proposal. The control efficiency utilized in the study yielding the high petroleum savings was disputed by the IPC, particularly with regard to crude oil tanks which have a lower emission rate. There was also a debate on the proper emission factors to be used. The authors of the study revised their findings on the basis of USEPA's revised emission factors (AP-42, 4/81 Revision) and found a smaller emission reduction and petroleum credit for crude oil tanks, resulting in a cost/effectiveness ratio of $2,255.8-2,334.8 per ton. The combined cost/effectiveness for gasoline and crude tanks in Illinois was revised to $24.1-453.3 per ton. Costs in Attainment areas, though less than in Non-attainment areas on a per ton basis, are higher overall due to the location of a greater number of crude tanks in Attainment areas.

In its final comment, the IPC reiterated its contention that these figures are too high to be considered cost-effective and that the amount of VOM reductions obtainable by application of secondary seals to crude tanks are too small to justify such an expenditure. (P.C. #49.) In its final comment, the IPC also interpreted the Board's proposed opinion as stating that the exemption proposed for "Heavy, Waxy Pour Crude Oil" would result in a better cost-effectiveness ratio for crude oil tank retrofitting. The point made in the proposed opinion was that the costs to the industry as a whole would be reduced by the exemption. The Board agrees that this does not, however, affect the cost-effectiveness of secondary seals on a per tank basis.

B. Discussion of Rule

In response to comments received during the First Notice period, the Board has determined that it is appropriate to exempt all crude oil tanks from the secondary seal requirements. There are several reasons for taking this approach rather than the approach taken in the proposed rule, i.e., exempting only tanks which contained "Waxy, Heavy Pour Crude Oil." First, although approximately two-fifths of the tanks in the state hold crude oil, they emit VOM at a low rate, and thus the emission reduction obtainable by retrofitting approximately 156 tanks is quite small (373 TPY). Second, the workability of the tests for "Waxy, Heavy Pour Crude Oil" has been questioned. (P.C. #37.) Third, the difference between the number of tanks which would require retrofitting if the exemption covered only those which had technical problems due to "Waxy, Heavy Pour Crude Oil", as opposed to all crude tanks,

is very small. In conclusion, the low cost-effectiveness, coupled with the small quantity of emissions at stake, indicate that secondary seals should not be considered RACT for crude oil tanks.

The Board rule adopts the Agency's proposed gap rule allowing 1/8 inch gap equal to 1.0 inch^2 per foot of tank diameter. This is not a zero gap policy, but provides a uniform standard which is somewhat narrower than the IPC proposal.

The semi-annual inspection proposal has been modified to a single inspection to take place prior to May 1st of each year. The seal gap should be inspected at this time also. The May 1st date is geared to the beginning of the ozone season in Illinois, and, to be most effective, it is anticipated that inspections will take place within the months immediately preceding this date.

The Board agrees with the Agency that the equivalency of other seals may be determined by the Agency pursuant to Rule 205(o)(3)(D)(iii).

VIII. Perchloroethylene Dry Cleaning

A. Introduction to the Issues

For commercial and industrial cleaners, under the Agency proposal RACT technology is carbon adsorption plus certain work practices. Coin-operated cleaners need only comply with the work practice requirements. The carbon adsorption systems are technically available and in wide use among large dry cleaners due to the fact that it is economical to capture and re-use the solvent. The capital cost for this system at a "model" commercial plant is estimated to be approximately $5,500 or $1,400 annually. Estimated solvent recovery valued at $2,100 annually would create a $700 annual gain. Comparable, though larger, figures are estimated for industrial plants. Notably, however, the EcIS found the cost effectiveness of the proposed work practices for coin-operated plants was $2,333 per ton of emissions even after considering a solvent recovery credit.

The total VOC emission reductions estimated to be available from this category under IEPA's proposal are 2,100 TPY. Approximately 1,600 commercial, industrial and coin-operated dry cleaners could be affected by these regulations. IEPA has permit information for only 115 of these. Average VOC emissions for a permitted facility without controls are estimated to be 7 TPY. There are an estimated 793 coin-operated dry cleaning facilities in Illinois and the model coin-operated facility with two units emits 0.3 TPY.

The Illinois Fabricare Association testified that many of the commercial dry cleaners in Illinois are far smaller than the USEPA model plant and use less solvent. Thus, their "payback"

on recycled solvent is smaller and the initial capital expenditure is more burdensome.

Among other things, the Fabricare Association recommended exemption for small dry cleaners using less than 30 gallons per month and that alternatives to the IEPA proposal be made available for the draining and drying of filtration cartridges.

B. Discussion of the Rule

Given the small amount of emissions produced by each plant and the difficulty of enforcing regulations with regard to many small plants, the Board rule adopts the Fabricare Association's recommended 30 gallons per month exemption level. In doing so, the Board notes that many of these small dry cleaners are within the purview of the recently adopted Illinois Regulatory Flexibility Act which mandates special regulatory consideration for small businesses. Testimony in the record indicated that many of these operations employ under 10 people and have an annual net profit of less than $3,000. The final rule has been amended to completely exempt facilities which are coin-operated or which use less than 30 gallons of perchloroethylene per month primarily because to attempt to enforce the work practice requirements at facilities which are not permitted is almost impossible.

Other changes have been made in the Agency proposal to provide additional flexibility in the work practices and emission reduction requirements while retaining equivalent environmental protection.

IX. Pneumatic Rubber Tires

A. Introduction to the Issues

Four manufacturing processes are addressed in this category: undertread cementing, tread end cementing, bead dipping, and green tire spraying. Carbon adsorption or incineration retrofitting is technically available for all four processes. A capture system is also required. Water-based coatings, as a substitute for solvents, are also available for green tire spraying.

Two Illinois plants will be affected by the undertread requirement. Carbon adsorption with solvent recovery is the most economical alternative for this process with a cost effectiveness of $312/ton of emission.

The "bead-dipping" process described in the CTG is apparently not used by any of the three Illinois plants. While the CTG process emits 8.2 grams per tire, the Illinois process emits 6.8 grams per tire. (P.C. 11, p. 6.)

The "tread-end cementing" process in the three Illinois

plants is, at least largely, manual rather than automatic. Data on manual tread-end cementing indicates emissions lower than the CTG estimates of 15 grams per tire for automatic. There was agreement in the record that manual tread-end cementing should be considered equivalent to RACT.

Water-based coatings are considered most economical for green tire spraying. Two of the three Illinois pneumatic rubber tire plants already use water-based coatings and the third is planning to switch over to it. However, the tire manufacturers dispute the availability of 5% VOM coatings for the outside of tires. They testified that a substitute water-based coating for the normal solvent-based mold-release compound used on the outside of tires will require a 10% VOM content. The EcIS found the cost effectiveness of water-based paints to be $236/ton of emission.

Representatives of the tire industry indicated that they would like to see a "net" per tire emission limitation of 59 grams, rather than process-by-process capture and reduction requirements.

The Agency proposal requires capture systems to have a minimum capture efficiency of 65%. USEPA has indicated they believe 85% capture efficiency represents RACT for the industry. However, the two Illinois tire plants having undertread cementing operations point out that the USEPA's reduction efficiency figures are based on the single carbon adsorption unit in operation in the country. They argue that even the model used did not achieve the CTG efficiency levels and that Illinois plants can be expected to achieve even less due to shorter residence times. (P.C. 11, p. 3.)

B. Discussion of the Rule

It appears the Agency inadvertently included 20 inch tires in the rule by use of the phrase "up to 20.0 inches." These tires are considered heavy-duty truck tires and are not included in the CTG. (Ex. 21; pp. 11-12.) Goodyear and Firestone suggested "up to, but not including" 20 inch tires as the appropriate cut-off point. To clarify this, the definition of Pneumatic Rubber Tire Manufacture has been modified in this fashion.

As noted above commentors have argued strenuously that the 65% capture efficiency described in Rule 205(t)(1)(A) is unachievable. (PC 29, PC 38.) Kelly-Springfield Tire, a subsidiary of Goodyear Tire states that the best overall efficiency that they have been able to achieve on a new undertread cementing capture and control system is 60%. They estimate that by retrofitting their Kelly-Springfield system they will be able to achieve only a 50% overall reduction. Using a 90% control system (carbon adsorption or incineration), this translates into a 55.5% capture efficiency. In a subsequent comment, Kelly-Springfield suggested a technical design standard to be used in place of a numerical

limitation for the capture system. However, there is no other information in the record describing the impact of using these paramters. In light of the extensive comments received on this subject, the Board is persuaded that the retrofitting of the Illinois plants affected by this rule is unlikely to produce a capture efficiency as high as is suggested in the CTG. The Board notes that RACT requirements are applicable to existing, rather than new, plants and must represent feasible retrofit technology. As redrafted, the rule states that the undertread cementing process must achieve a 55.5% capture efficiency.

New Rule 205(t)(3) allows the use of different approaches to any of the regulated processes which can be demonstrated to be equivalent on the basis of VOM emitted, e.g. that manual tread-end cementing and the existing Illinois bead-dipping process. In response to comments made during the First Notice Period (P.C. 51 and 38), a specific alternative emission limitation of ten grams per tire or less for the tread-end cementing operation has been included in Section 205(t)(3). Its purpose is to provide a quantifiable limitation which can be used easily in determining the equivalency of an alternative volatile organic emission reduction system for this process. The ten grams per tire limitation has been recommended by USEPA for inclusion in a proposed New Source Performance Standard for this operation and is considered to be achievable with the manual tread-end cementing process currently used by Illinois tire manufacturers. The Board declines to create a specialized "bubble" rule for this category. However, a "grams-per-tire" approach covering multiple processes may be proposed under the Board's recently adopted Alternative Control Strategy rules (Chapter 2, Part 212).

X. Synthesized Pharmaceuticals

A. Introduction to the Issues

Emission reductions available by application of RACT II in the synthesized pharmaceuticals category represent one-half of one percent of the total emission reductions believed to be available in Illinois, or 300 TPY. (See EcIS, Table 3.19, p. 81.) Although USEPA identified 40 pharmaceutical plants in Illinois, only five of these plants synthesize pharmaceuticals. Each plant may contain a number of different sources of VOC emissions, but IEPA found that only four point sources, reactors, centrifuges, crystallizers, and dryers have the potential to emit greater than 15 pounds per day. IEPA has proposed to exempt sources with the potential to emit less than 15 pounds per day. Retrofitting the remaining sources with condensers, scrubbers, or carbon adsorbers is considered RACT by USEPA. (Ex. 6.)

While it is technically feasible to achieve a 90% reduction in emissions from these point sources by retrofitting, it is not

cost efficient due to the small rate of emissions. The EcIS estimated a cost effectivenss of $8,092.60 per ton for this category. (See EcIS, Table 3.19, p. 81.)

B. Discussion of the Rule

The Board finds that application of the recommended retrofit technology is not economically reasonable for Illinois plants in this category due to the insignificant level of emissions which would be captured and the expense of the equipment involved.

XI. Compliance Dates

Many of the compliance dates originally proposed by the Agency have become outdated in the course of this rulemaking. Rule 205(j) adopts December 31, 1983 as the final compliance date for Rule 205(n)(1)(J) and (K), Rule 205(o)(3), Rule 205(s), Rule 205(t), and Rule 205(u)(1)(A)-(C). This deadline is designed to provide sufficient time after promulgation of the rule for internal planning decisions, equipment design, any necessary agency approvals, delivery, installation and "debugging."

Rule 205(m)(4), (5) and (6) establish special plan submittal and compliance dates for petroleum leak monitoring, low-solvent top coating development programs for Heavy, Off-Highway Vehicle Products and Diesel-Electric Locomotive Products, and low-solvent ink developments programs. It is anticipated that petroleum monitoring programs will be carried out for the 1983 ozone season. The low-solvent coating and ink development programs are eligible for an extension of the compliance deadline until 1986 and 1987, respectively, if the compliance plan provisions and other commitments are met.

In the Board proposal, the deadline for implementation of dry cleaner work practices meeting the requirements of Rule 205(u)(1)(D)-(G) was December 31, 1982. It was intended that this would allow several months for planning as well as purchasing and hiring if these are found to be necessary. However, since this rule will not be finalized until the end of the year, this compliance date has been changed to May 1, 1983 to allow for the planning necessary and to correspond with the beginning of the ozone season.

The deadlines for submittal of compliance plans for emission sources subject to Rule 104(h)(1) are generally adopted as proposed by the Agency. Since these dates are based on a certain time period after promulgation of the rule, changes were not necessary. However, new subsections (2) and (3) have been added to provide dates for compliance plan submissions by sources subject to new Rules 205(j)(2) and (3). Souces subject to Rule 205(j)(2) have a December 31, 1987 compliance date and must submit compliance plans one year in advance of that date or by December 31, 1986.

Sources subject to Rules 205(j)(3) must comply within one year from the date of redesignation and their compliance plans are due within 90 days after the date of redesignation. Rule 104(a), addressing the requirement of a compliance plan for emission sources not in compliance, has been reworded to improve clarity.

It should be noted that compliance plan submittal dates for the low solvent development programs listed in Rules 205(m)(5) and (6) are December 31, 1983. These later submittal dates are adopted in recognition of the fact that commitments to be made in the plans will require significant study. In particular, if planned reductions do not occur by an interim date for emission sources utilizing the low-solvent ink programs, retrofit technology must be implemented. (See Rule 205(m)(6)(C).)

Board Members J. Dumelle and N. Werner concurred.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Proposed Opinion was adopted on the 21st day of October, 1982 by a vote of 5-0.

Christan L. Moffett, Clerk
Illinois Pollution Control Board