

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE MINNESOTA POLLUTION CONTROL AGENCY

In the Matter of Proposed
Permanent Rules Governing Standards

REPORT-OF THE

and Abatement Methods for Lead in
Bare Soil on Playgrounds and
Residential Property, Minn. Rules,
Pts. 4750.0010 to 4750.0050.

ADMINISTRATIVE LAW JUDGE

The above-entitled matter came on for hearing before Administrative Law Judge Allen E. Giles on November 5, 1990, at 9:30 a.m. In the Board Room, Lower Level, 520 Lafayette Road North, St. Paul, Minnesota and on November 7, 1990, at 10:05 a.m. in the Conference Room of the Pollution Control Agency, 1450 Energy Park Drive, St. Paul, Minnesota.

This Report is part of a rulemaking proceeding held pursuant to Minn. Stat. §§ 14.131 to 14.20, to hear public comment, to determine whether the Minnesota Pollution Control Agency (MPCA) has fulfilled all relevant substantive and procedural requirements of law applicable to the adoption of the rules, whether the proposed rules are needed and reasonable and whether or not modifications to the rules proposed by the MPCA after initial publication are impermissible, substantial changes.

Alan R. Mitchell, Special Assistant Attorney General, Suite 200, 520 Lafayette Road, St. Paul, Minnesota 55155, appeared on behalf of the MPCA at both hearings. The MPCA's hearing panel consisted of Placida Venegas, Cindy Perusse, and Sharon Meyer.

Twenty persons attended the first hearing. Thirteen persons signed the hearing register. As a result of the public interest and the need for every interested person to be allowed the opportunity to comment, the Administrative Law Judge recessed the hearing at the end of the day and continued the matter

until November 7, 1990. The hearing was reconvened at the MPCA office in Energy Park, St. Paul, on November 7, 1990. Since the original hearing room was not available, MPCA staff contacted by telephone all those persons who signed the hearing register and left a notice at the first hearing location of where the reconvened hearing would take place. The start of the hearing was delayed approximately one-half hour to permit any persons going to the first location to find the new location. Eleven persons attended the reconvened hearing. Two persons signed that hearing register. Both hearings continued until all interested persons, groups or associations had an opportunity to be heard concerning the adoption of these rules.

A total of 61 exhibits were were received as documentary evidence during the hearings. The MPCA submitted Exhibits 1-52 and 61. Interested party Mr.

Patrick L. Reagan, Minnesota Lead Coalition, submitted Exhibits 53 and 55-57. Interested Party Ms. Judy Adams, Lead Free Kids, Inc., submitted Exhibits 58-60. The Minnesota Department of Health submitted Exhibit 54.

The record remained open for the submission of written comments for twenty calendar days following the date of the second hearing, to November 27, 1990. Pursuant to Minn. Stat. § 14.15, subd. 1 (1988), three business days were allowed for the filing of responsive comments. At the close of business on November 30, 1990, the rulemaking record closed for all purposes. The Administrative Law Judge received 8 written comments from interested persons during the comment period. The MPCA submitted written comments responding to matters discussed at the hearings and making changes in the proposed rules.

This Report must be available for review to all affected individuals upon request for at least five working days before the agency takes any further action on the rule(s). The agency may then adopt a final rule or modify or withdraw its proposed rule. If the Board makes changes in the rule other than those recommended in this report, it must submit the rule with the complete hearing record to the Chief Administrative Law Judge for a review of the changes prior to final adoption. Upon adoption of a final rule, the agency must submit it to the Revisor of Statutes for a review of the form of the rule. The agency must also give notice to all persons who requested to be informed when the rule is adopted and filed with the Secretary of State.

Based upon all the testimony, exhibits, and written comments, the Administrative Law Judge makes the following:

FINDINGS OF FACT

Procedural Requirements

1. On September 24, 1990, the MPCA filed the following documents with the Chief Administrative Law Judge:

- (a) A copy of the proposed rules certified by the Revisor of Statutes;
- (b) An Issue Statement requesting an Authorizing Resolution;

- (c) The Notice of Hearing proposed to be issued; and,
- (d) The Statement of Need and Reasonableness (SONAR).

2. On September 27, 1990, the MPCA transmitted a facsimile of the Order for Hearing to the Office of Administrative Hearings (OAH).

3. On September 28, 1990, the MPCA mailed the Notice of Hearing to all persons and associations who had registered their names with the Board for the purpose of receiving such notice.

4. On October 1, 1990, the MPCA filed its Notice of Intent to Adopt Rules with OAH.

5. On October 1, 1990, a Notice of Hearing and a copy of the proposed rules were published at 15 State Register 825.

6. On October 9, 1990, the MPCA filed the following documents with the Administrative Law Judge:

- (a) The Notice of Hearing as mailed;
- (b) A photocopy of the pages of the State Register containing the Notice of Hearing and the proposed rules.
- (c) a copy of the Notice of Solicitation of Outside Opinion together with all materials received in response to that notice
- (d) The Agency's certification that its mailing list was accurate and complete;
- (e) The Affidavit of Mailing the Notice to all persons on the MPCA's mailing list;
- (f) The Agency personnel who would represent it at the hearing; and,
- (g) A statement by MPCA's counsel that the rules were not expected to impose an expenditure of money by public bodies in excess of \$100,000 per year over the next two-year period.

7. The MPCA was required to change the location of the second hearing, held on November 7, 1990, through circumstances outside the control of the Agency. The room named in the Notice of Hearing as the location of the public hearing was unavailable for the hearing on November 7, 1990. The location of the hearing was moved to the MPCA's Energy Park office. Notices were posted at the original location informing interested persons of the change. MPCA staff contacted all those persons who signed the hearing register by telephone and advised them of the change. Under these circumstances, the change of location for the second hearing from that stated in the Notice of Hearing does not constitute a defect.

Nature of the Proposed Rules and Statutory Authority..

8. The Minnesota Legislature, pursuant to Minn. Stat. § 144.878 (1990), has directed the MPCA and the Minnesota Department of Health (MDOH) to promulgate rules that seek to achieve a safe environment for vulnerable populations (primarily children) and reduce the blood lead level of persons adversely affected by existing environmental lead contamination. These

proposed rules establish a standard for lead found in the soil of residential property and playgrounds and specify methods of abatement of soil in violation of the standard. A rulemaking proceeding has been initiated by the Minnesota Department of Health that will set standards for lead paint, lead in drinking water, and lead contamination of dust. The rules from the MPCA and the MDOH are intended to operate in tandem to alleviate the harmful effects of lead in persons' blood streams. Reference will be made to the MDOH proceeding where appropriate.

Minn. Stat. §§ 116.53, subd. 1 and 144.878 (1990) require the Commissioner of the MPCA to adopt standards for lead in bare soil on playgrounds and residential property by January 31, 1991. The Administrative Law Judge concludes that the MPCA has statutory authority to adopt these rules.

Small Business Considerations in RuleMaking.

9. Minn. Stat. § 14.115, subd. 2, provides that state agencies proposing rules affecting small businesses must consider methods for reducing

adverse impact on those businesses. The proposed rules set a standard of general application. The scope of that standard is limited to residential property or playgrounds. The only area in which small businesses may be affected by these rules is in the regulation of abatement methods, since small businesses may be abatement contractors. The MPCA suggested that the variance procedure for abatement methods would be adequate to relieve any undue hardships on small businesses. see SONAR, at 27. The MPCA asserted that any other changes to favor small businesses would defeat the agency's statutory mandate. Id. No small businesses claimed an adverse impact would result from the operation of these rules. The MPCA has met the requirements of Minn. Stat, § 14.115, subd. 2 to consider methods of reducing the impact of the rules on small businesses.

Fiscal Notice.

10. Minn. Stat. § 14.11, subd. 1, requires the preparation of a fiscal notice when the adoption of a rule will result in the expenditure of public funds in excess of \$100,000 per year by local public bodies. The notice must include an estimate of the total cost to local public bodies for a two-year period. MPCA, through its counsel, has stated that it does not expect the proposed rules to require the expenditure of that amount in either of the two years following the adoption of the rules. The only manner in which the rule could require any expenditure of public funds is by requiring abatement of soil in public parks which exceed the soil lead standard. Evidence presented at the hearings suggests that the current lead levels in such parks are well below the standards suggested by any of the commentators or the MPCA. See Exhibit 53 (Lead Coalition Exhibit 2, at 3 and 16); see also Exhibit 13. The extremely low soil lead levels of the parks compels the conclusion that any abatement costs imposed by the rule will be minimal. The proposed rules will not require expenditures by local governmental units or school districts in excess of \$100,000 in either of the two years immediately following adoption, and thus no notice is needed.

Impact on Agricultural Land.

11, Minn. Stat. § 14.11, subd. 2 (1988), imposes additional statutory requirements when rules are proposed that have a "direct and substantial adverse impact on agricultural land in this state." The statutory requirements referred to are found in Minn. Stat. §§ 17.80 to 17.84. The evidence presented at the hearing clearly indicated that the problem of soil lead contamination is almost exclusively confined to urban areas. The proposed rules will have no substantial adverse impact on agricultural land within the meaning of Minn. Stat. § 14.11, subd. 2 (1988).

Economic-Impact of the Proposed Rules.

12. Minn. Stat. § 116.07, subd. 6 (1988) requires the MPCA, in a rulemaking context, to consider the impact which economic factors may have on the feasibility and practicability of the proposed rules. In its SONAR, the MPCA has undertaken a comprehensive analysis of economic factors related to the implementation of the proposed rules. In the analysis the MPCA has considered anticipated costs and benefits of the proposed rules. Based on

this analysis the MPCA has determined that the proposed rules will provide substantial public benefits while having only a negligible economic impact on the affected sectors. The MPCA has adequately considered the economic feasibility and practicability of implementation of the proposed rules as required by Minn. Stat. § 116.07, subd. 6.

Proposed Rule 4750.0010 - Applicability

13. This proposed rule part sets forth the scope of the soil rules with regard to sites and persons. Originally, the proposed rule applied to "a property owner who is performing or has been ordered to perform abatement of lead in bare soil on residential property." In response to comments by Mr. Patrick L. Reagan of the Minnesota Lead Coalition (MLC), the MPCA altered the rule part to read "any person who is performing abatement of lead in bare soil on residential property and playgrounds." The addition of playgrounds is needed and reasonable to conform to the requirements of Minn. Stat. § 144.878, subd. 2(b), which specifically requires that the rules include playgrounds. The MPCA asserted that, since a property owner would not always be the individual performing abatement, expanding the applicability of the rules to anyone performing abatement was needed and reasonable. The change to "any person" is needed and reasonable.

MPCA also altered proposed rule 4750.0010 by deleting the phrase "or has been ordered to perform" from the persons to whom this rule applies. The effect of this change, if the rule part is to be read literally, is to limit the applicability of the proposed rules to those persons who are, in fact, abating the lead problem present on their property. The MPCA interprets "performing abatement" to mean any person whose property violates the soil lead standard. This interpretation is reasonable given the absence of any specific statutory enforcement mechanism. The changes made to the proposed rule were discussed at the hearing on this matter and do not constitute a substantial change.

14. Proposed rule 4750.0015, as amended, is composed of ten subparts,

the first limiting the scope of the definitions to the proposed rules and the remaining nine defining a term used in the proposed rules. One of those nine subparts (defining "person") is composed of entirely new material added to the rule in response to comments. The definition of "person" merely incorporates the statutory definition of that term. The only adverse comments received concerning this rule part objected to two definitions, "bare soil" and "playground." The definitions which were not objected to are needed and reasonable. The addition of a definition of "person" does not constitute a substantial change.

Subpart 4. Bare Soil.

15. Minn. Stat. § 144.878, subd. 2(b) requires the MPCA to set soil lead standards for bare soil on playgrounds and residential property. To aid in the understanding and enforcement of a bare soil standard the MPCA defined "bare soil." The original definition set a standard of fifty percent ground cover. This definition was altered to an "outdoor area of one foot or more where soil is visible." Several commentators objected to the proposed

clefiniti on on the basis that soil being "v I sible" cou Id lead to arbitrary enforcement where vegetation was sparse but present. In addition, these commentators suggested that one square foot was not a reasonable measure of area to determine whether the bare soil standard is met at a particular location. The MPCA responded to these comments by altering the definition to delete the visibility standard and alter the area standard to a continuous area of a square foot or more. This change does not resolve the question of whether sparse vegetation will satisfy the coverage requirement. The MPCA suggested at the hearing and in its final comments that bare soil in one square inch increments would fall under the definition of bare soil if enough of them are consecutive. Although this definition appears unduly cumbersome, it is needed and reasonable to set a floor under which abatement would not be required as being de minimis. Further, the definition is needed and reasonable to constitute an agency determination that access to soil is not significant in areas of such limited size.

Since the purpose behind the proposed rules is to eliminate the problems caused by contaminated soil, the MPCA could define bare soil in terms of the harm to be averted. Using a functional definition was proposed by Judy Adams of Lead Free Kids, Inc. (LFK). She suggested altering the definition of "bare soil" to take into account the root causes of lead toxicity problems, particularly in children. (Adams final comments, November 29, 1990). The evidence presented at the hearing supports the conclusion that soil lead enters the blood stream through a practice called pica (consumption of nonfood items such as leaded paint chips and soil) and ingested dust. This suggests that intervention should occur to prevent physical access to soil (thus preventing pica) and to eliminate the potential for spreading lead through dust. Under such an approach "bare soil" could be defined as:

Any outdoor area where: 1) soil is accessible to children; or, 2) soil is capable of becoming dust by natural forces.

The suggested definition eliminates the potential for soil lead in violation of the adopted standard being a contributing factor to lead poisoning, but not falling within the scope of the abatement process. The critical aspects of the analysis are not visibility and size, but access to the affected populations. Under this suggested definition, the percentage of ground cover is not a factor. Rather, the potential for ingestion (either as soil or dust) is the determining factor. This approach is also needed and reasonable in light of the legislative intent behind requiring these rules and should provide the flexibility needed to abate contaminated soil and thereby reduce blood lead levels in vulnerable populations. Neither the language proposed by the MPCA nor the language suggested in this paragraph constitutes a substantial change.

Subpart 9. Playground.

16. The only comments made regarding proposed subpart 9 objected to excluding public parks and public playgrounds from the definition. The MPCA had originally proposed excluding these facilities from the definition of playgrounds since no soil lead problem exists there. The evidence in the hearing records bears out this opinion. A study of soil lead in parks throughout Minneapolis and St. Paul indicates that the lead content falls well

below the soil lead levels proposed by the MPCA and appears to comply with more restrictive standards proposed by some commentators. See Exhibit 53 (MLC Exhibit 2, at 3, 16 and 17); see also Exhibit 13. Nevertheless, to exclude locations that are known to be areas where vulnerable populations congregate and interact is inconsistent with the express statutory authority granted to the MPCA. The deletion of the public park and public playground exemption is needed and reasonable. The change was discussed at the hearing and does not constitute a substantial change. The potential fiscal impact on local public bodies is discussed at Finding 10, above, and the procedural effect created by that impact does not constitute a defect in the proposed rules.

Proposed Rule 4750.0020 - Bare Soil Standard

17. The cornerstone of the proposed rule is the selection of a standard determining what level of lead in soil is unacceptable. Proposed rule 4750.0020 set that standard at 3/100 of one percent by weight. The description of this standard used in the hearing was 300 parts per million (ppm). Lead Industries Association, Inc. and Mr. James W. Sorbel, Director of Government Relations for the Minnesota Multi Housing Association, objected to the 300 ppm standard as being too restrictive. The commentators cited the levels already in place through the interim standard in Minnesota (500 ppm) and a Federal Environmental Protection Agency (EPA) directive (500 ppm in soil) as evidence that the 300 ppm standard is, in fact, too low. Mr. Sorbel proposed that the interim standard of 500 ppm should be retained. The Lead Industries Association suggested that, due to the varied circumstances of lead contamination, the only reasonable approach is to proceed on a case-by-case basis and not a general standard as an upper limit of lead concentrations.

Other commentators strongly urged that the standard proposed by the MPCA is too high to provide protection for vulnerable populations. Mr. Patrick L.

Reagan, a consultant appearing on behalf of the MLC, proposed a 100 ppm standard. MLC maintains that this standard is adequate to protect even the most vulnerable members of the affected population. In addition, MLC urged deletion of the language which restricted the application of the proposed rule to those properties for which a board of health assessment is required. The MPCA agreed with the suggested deletion and made that change in the proposed rule. The MPCA did not agree with the 100 ppm standard proposed by MLC. Ms. Adams thought that the 300 ppm standard was suitable as a general abatement standard, but that a 100 ppm standard should be imposed on residences where lead poisoning occurs. (Adams November 27, 1990, comments at 2 and 5) . Both the issues of a lead standard and what enforcement should be required will be discussed in detail in the following Findings.

Deletion of Board of Health Assessment Requirement.

18. As originally proposed, the soil lead standard would only apply to those properties for which the board of health was required to perform an assessment under Minn. Stat. § 144.874, subd. 1. In effect, only when a child or pregnant woman shows an elevated blood lead (BPb) level would assessment be required. For children, elevated BPb is defined as 25 micrograms of lead per deciliter of whole blood (hereinafter styled as 25 ug/dl). Minn. Stat. § 144.871, subd. 6. Assessment is required if the BPb of a pregnant women exceeds 10 ug/dl. Minn. Stat. § 144.874, subd. 1(2). The Commissioner of the

MDOH is authorized to determine if a lower BPb is necessary to protect public health. Minn. Stat. § 144.871, subd. 6. The MPCA is not given authority to determine what is an elevated BPb.

LFK and MLC objected to the limitation of applying the standard to only those properties for which board of health involvement is required. They proposed instead that the standard be promulgated as an upper limit for all residential properties, regardless of whether elevated BPb is found in any of the residents there. There are excellent reasons for promulgating the standard set by these proposed rules as a general standard independent of BPb. With the potential for contamination by dust arising from soil, the universal reduction of lead in soil would result in a lowering of the baseline lead ingested through eating contaminated food, breathing contaminated air, or breathing in contaminated dust. MLC and LFK advocate a regional approach to the problem of lead contamination which would, in effect, reduce the soil lead concentration through out residential areas of Minneapolis and St. Paul to within the adopted lead standard, regardless of whether any BPb problem is identified. Completely divorcing the standard from persons identified with high BPb is a necessary first step in that process.

There are also excellent reasons for limiting the application of the soil lead standard to identified BPb problems. Ernest Swenson, Executive Director of People of Phillips (a Minneapolis neighborhood group), opposed the adoption of soil lead standards. This opposition comes despite representing an area among the highest in soil lead concentrations in Minnesota, a population suffering from a very high infant mortality rate, and a large number of persons with elevated BPb. The basis for People of Phillips' opposition is that no present program exists to assist homeowners, property owners, or interested groups in paying for the costs of abatement. People of Phillips is concerned that the portion of dwellings which are rental properties (85%) will not be abated, but abandoned by their owners. The remaining 15% of dwellings

(those that are owner-occupied) are owned by persons who lack the disposable income to pay for abatement. To require these persons to abate the soil lead on their property will impose hardships on these persons without the existence of an identified elevated BPb. The impact of such a regulatory course could devastate an already troubled neighborhood through abandonment of buildings, a loss of property tax base, and the migration of concerned citizens to other neighborhoods. These sentiments were also expressed by the Minnesota Association of Realtors through Ms. Jill Sammon, its Director of Governmental Affairs.

The MPCA presently has no plans to enforce a universal standard for soil lead in the absence of elevated BPb detected by local boards of health. The MPCA has no funds available to inspect, issue citations, or enforce its proposed lead standard. The Commissioner of MPCA is required to adopt "standards and abatement procedures," but not enforcement methods. Minn. Stat. § 144.878, subd. 2(b).

The overall statutory approach to lead toxicity is clearly tied to a system focusing on blood tests of vulnerable populations and requiring abatement of individual locations rather than entire neighborhoods. However, the statutory scheme for reducing environmental lead does not authorize local boards of health to issue abatement orders for violations of the soil lead standard. Minn. Stat. § 144.874, subd. 3. While many have assumed that

enforcement of the soil lead standard by local boards of health is implied by the statute, the express language of the statute belies that assumption. The original wording of the proposed rules suggested that local boards of health would be issuing abatement orders for lead in soil. Retaining that language could create a defect in the proposed rules, since the result may be a subdelegation of authority in contravention of the statutory system. Deleting the connection between the soil lead standard and citations issued by local boards of health is needed and reasonable to avoid this potential problem. The change does not affect the ultimate standard adopted and therefore does not constitute a substantial change.

Soil-Lead stAndard.

19. The MPCA standard for prohibited amounts of lead in bare soil is proposed at 300 ppm or more. Whenever a health based standard is imposed through rulemaking, the agency must demonstrate a "reasoned determination" supporting the standard chosen for the rule. *Manufactured Housing Association v. Pettersen*, 347 N.W.2d 238, 246 (Minn. 1984) (emphasis in original). The MPCA's stated basis for the standard is two-fold. First, the MPCA has made a determination as to what adverse health effects occur at varying levels of BPb. Second, the MPCA applied a biokinetic analysis to determine what level of soil lead would provide an appropriate degree of protection for the public health. *SONAR*, at 16. The biokinetic analysis was prepared by the Society for Environment, Geology, and Health (SEGH). An algebraic representation of the analysis appears as follows:

$$S = \frac{L(T/G-)}{d} \cdot 7 \cdot 1000$$

The variables used in the formula are: S (soil lead standard); T (target blood

lead level); G (standard deviation); n (number corresponding to the percentage of the population to be protected); B (the background lead level in blood); and d (the rate at which lead is metabolized, assuming a consumption of soil contaminated to a level of 1000 ppm).

The variables adopted by MPCA are as follows:

$$s = \frac{[(1Q/1.4)^2 + 2.32^2 + 4]}{2} \times 1000$$

Carrying out the calculation, S (the soil lead standard) would be 290 ppm. The rounding of that number to 300 ppm is not statistically significant. By MPCA estimate, exposure to 300 ppm soil would only raise BPb by 0.6 ug/dl. SONAR, at 15.

To arrive at this standard, the MPCA made some assumptions (as did SEGH) about the nature of the soil lead problem. The first, and perhaps most critical assumption is that soil lead is absorbed in the bloodstream at a rate of 2 ug/dl for every 1000 ppm of lead ingested. That figure is used in the

SEGH study and is supported by a study entitled Modelling the Blood Lead

Soil Lead Relationship (Marcus and Cohen). Exhibit 8. That study examined many other researchers analyses and concluded "[t]he blood lead slope estimate in most studies is about 2 ug/dL per 1,000 ug/g soil lead, but may be as large as 7 ug/dL per 1,000 ug/g." Id. at 172.

The difficulty in determining a "safe" level of soil lead is that not only the concentration of lead in soil, but the amount of lead-contaminated soil consumed contributes to the BPb of vulnerable populations. This interrelation of factors is shown by a model on page 120 of Exhibit 3. That exhibit, a scientific paper by Rufus Chaney, Howard Mielke, and Susan Sterrett, did not adopt a specific rate of metabolization, but approached the BPb problem from a "worst-case, most vulnerable population" standpoint and advocated a soil lead standard of < 150 ppm.

The MPCA did not take a most vulnerable population approach. The value chosen for the percentage of population protected is the number which corresponds to 99% of the affected population. MLC advocated that the MPCA is required by Minn. Stat. § 144.878, subd. 2(b) to protect the most vulnerable populations through the soil lead standard. The choice of how much of the affected population to protect will always be an issue where there is no consensus on a "safe" level of contamination. The level selected by the MPCA protects all but 1% of the persons affected by elevated BPb. The methods of ingestion and the degree of control available to isolate the additional sources of lead (such as paint chips and lead in drinking water) suggest that the level selected will result in an adequate degree of protection for the entire community. As mentioned above, the MPCA calculates that ingestion of the "average" amount of soil, with contamination not exceeding 300 ppm, results in an increase of 0.6 ug/dl. Combining that amount with the average background BPb of 4.0 ug/dl leaves the total level well below the target (or

threshold BPb) of 10 ug/dl. The MPCA also examined the effect of soil lead if the 7 ug/dl factor is used and concluded that the proposed standard would adequately protect vulnerable persons. SONAR, at 15.

Another factor needed to calculate the soil lead standard is the target BPb. This level is the point under which one is seeking to hold the majority of blood lead levels. For the proposed standard, the MPCA selected 10 ug/dl. This level was criticized by the MLC as not taking into account the adverse health effect (a reduction in hearing) that occurs with as little as 6 ug/dl. Rather, the MPCA based its choice of a target level on the inhibition of amino acid development necessary for the natural synthesis of heme (an important component in the bloodstream). This damage occurs at 10 ug/dl of BPb. Exhibit 55 (MLC Exhibit 10, at 457); see Also Exhibit 60. The federal Environmental Protection Agency has determined intelligence quotient deficits occur at that level. Exhibit 53 (MLC Exhibit 1, at II-7). At 10 ug/dl of BPb, local boards of health must conduct residence assessments of pregnant women. Minn. Stat. § 144.874, subd. 1. Local boards of health must provide a residential lead assessment guide (to be prepared by MDOH) to parents if any of their children are identified as having BPb of 10 ug/dl or more. Minn. Stat. § 144.874, subd. 2. Abatement on lead sources must be ordered when a pregnant woman has a BPb of 10 ug/dl or higher. Minn. Stat. § 144.874, subd. 3, The Legislature has selected 10 ug/dl as the lowest level requiring some sort of intervention. That level is referred to as the consensus figure for

risk to children. Exhibit 53 (MLC Exhibit 1, at II-23); see also Exhibit 57, at 137. The record demonstrates that BPb has a clear and adverse health effect at 10 ug/dl. The MPCA's adoption of that level in setting a threshold for protecting 99% of the population is both needed and reasonable.

MLC objected to the use of 4.0 ug/dl as the numerical equivalent of the background lead level in blood. At the second hearing, Mr. Reagan proposed that 4.5 ug/dl be used as the background BPb. He asserted that the 4.5 ug/dl figure is a more accurate description of local BPb than the 4.0 ug/dl figure used by SEGH (and adopted by the MPCA). Mr. Reagan based his assertion on the SEGH figure (4.0 ug/dl) being a national average which does not take into account specific factors. The most prominent factor being exposure to the urban environment. Calculating the soil lead standard from the SEGH formula and only altering the background BPb to 4.5 results in the following calculation:

$$S = \frac{2.32}{2} \left(\frac{1000}{5} \right) = 40$$

Based on the altered background level, S would equal 40 ppm of lead in soil. At that soil lead level, the increase of BPb from the "average" consumption of contaminated soil would be 0.08 ug/dl. Adding that figure to the background level would not result in any appreciable increase of BPb. The calculation of the standard which would result from increasing the background lead variable is included in this Report to show that altering that variable has a dramatic impact on the standard. MLC has not introduced any data to demonstrate that the background lead level of 4.5 ug/dl is more valid than the SEGH figure of 4.0 ug/dl which has been adopted by the MPCA. The use of 4.0 ug/dl to arrive at the soil lead standard is needed and reasonable.

The last variable in the SEGH figure is the denominator reflecting the rate at which soil lead consumed is absorbed into the bloodstream. The MPCA

selected a rate of 2 ug/dl for every gram of soil containing 1000 ppm of lead. MLC advocated using a 7 ug/dl figure as the more accurate rate of absorption. Based on a study of BPb absorption, both rates are valid for the purposes of statistical modelling. See Exhibit 8, at 172. The actual rate of absorption varies by the age of the person; the existing contents of the stomach; the calcium, iron, and phosphorus levels of the person consuming the lead; and the size of the lead particles consumed. Exhibit 11, at 2-3, Exhibit 5, and Exhibit 3. The MPCA has chosen the lowest absorption rate in setting the soil lead standard. The soil lead standard selected, however, will not significantly raise BPb concentrations if the 7 ug/dl rate is used. See SONAR, at 15. Selecting the lowest level of absorption provides a baseline figure and is the result of a reasoned determination.

The absorption debate is indicative of the fundamental problem facing these rules. Lead contamination does not arise from one source, nor does it create a consistent harm to vulnerable populations. The effect of lead contamination (particularly in soil and paint) can be alleviated by reducing or eliminating pica, whether or not the contamination is eliminated. Thus, young children are the most likely persons to display lead toxicity from residential sources. Since that behavior is difficult to control, many persons choose to move from lead contaminated premises as the easiest and least expensive method of "removing" the lead problem. Abating the lead

problem requires isolating bioavailable lead from consumption. The underlying assumption of the MPCA is that when proper abatement is performed, all sources will be reduced, if not eliminated. Except for the continuing contribution that soil lead makes to lead in household dust, the other common sources of lead (paint chips, household dust, and drinking water) can be eliminated. Some lead will remain in soil, no matter what standard is applied. Since it is impractical (and therefore unreasonable) to render soil "lead-free," the MPCA is left with the task of determining what level is acceptable. The MPCA cannot reasonably protect the individual who engages in geophagia (eating dirt) to a large extent since any lead level higher than zero can result in an increase in BPb beyond 10 ug/dl. Similarly, the person who ingests paint chips will be consuming much higher concentrations of lead than the person who consumes an equal weight of soil contaminated at the 300 ppm level. Taking into consideration the factors and circumstances before it, the MPCA has fashioned a standard that is reasonable, responsible, and will have the effect of reducing exposure to harmful soil lead levels.

MLC maintains that the MPCA failed to account for other lead sources in its biokinetic model, and that the contributions to BPb from those other sources require that the standard be set at 100 ppm to ensure that any error is on the side of protecting the public. As discussed in the foregoing paragraph, those other sources will be the object of MDOH rules. Both the MPCA and the interested parties have assumed that these other sources will be reduced or eliminated as part of the overall abatement process. Further, the MPCA has shown that the contribution to BPb by ingestion of soil contaminated at less than the 300 ppm standard will be minimal with respect to the target BPb of 10 ug/dl. The agency has made a reasoned determination of what the soil lead standard should be within the meaning of Manufactured Housing. The MPCA has shown that the 300 ppm standard regarding soil lead is needed and

reasonable. Deleting the express reference to local boards of health does not constitute a substantial change.

Proposed Rule 4750.0030 - Abatement Methods for Bare Soil.

20. The MPCA is required to adopt abatement methods by virtue of Minn. Stat. § 144.878, subd. 2(b). In accordance with that mandate, the MPCA has proposed rule part 4750.0030. This proposed rule part was originally divided into four subparts. After extensive comments at the hearings, the proposed rule part was extensively redrafted. The altered rule part has seven subparts. Each subpart will be discussed individually.

Subpart 1 - Applicability.

21. Subpart I sets forth the persons to whom the proposed rule part applies. As with the standard itself, the MPCA has deleted any relation to the actions of local boards of health. The reasons for such a deletion are presented in Finding 18, above. In addition, the agency has altered the subpart to replace "property owner" with "person." The result of this change is to require anyone, including a volunteer, to comply with the requirements regarding the manner, type, and priorities of an abatement project, rather than merely the owner of the property. Subpart I is needed and reasonable to establish the scope of the abatement rules. The changes do not constitute substantial changes.

Subpart 2 n Abatement-Methods.

22. Subpart 2 lists the methods which may be used to abate soil in violation of the 300 ppm standard. With the exception of soil containing visible paint chips, the MPCA allows a choice of covering or removing the contaminated soil. This change was supported by Ms. Adams, who maintained that the problem of BPb would be eliminated by merely covering the soil, whereas attempting to remove the soil in every case would generate higher amounts of ambient lead and cause higher BPb levels than merely covering the bare soil. Mr. Reagan took the position that soil contaminated with lead to the degree of 1000 ppm was not suitable for covering as an abatement method, because the covering option was considered "unreliable" at that level. MLC Analysis of the proposed Rule - supplement at 14. That position is supported by the Agency for Toxic Substances and Disease Registry, which concluded:

- (1) Excavation of lead-contaminated soil and on-site decontamination is too costly and operationally unwieldy.
- (2) The effectiveness of soil lead abatement steps such as capping, rototilling, excavation, and on-site disposal are uncertain for soil lead levels of 1,000 ppm or higher. On the other hand, they may work for soil with lead levels below 1,000 ppm.
- (3) Excavation of lead contaminated soil with off-site disposal, augmented with Pb-B-level testing for children in the affected residences, seem best for protection; cost and off-site disposal impacts, however, may be a problem.

Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services, Public Health Service, The Nature and Extent of Lead Poisoning in children in the United States : a Report To Congress (exhibit 14). No studies in the rulemaking record support the conclusion that capping is not an appropriate option for lead in soil in excess of 1000 ppm. Capping was used as an abatement method for soil in excess of 1000 ppm lead in a project in Baltimore, Maryland (so long as the soil did not exceed the hazardous waste standard for lead leachate). Exhibit 16. Allowing a choice for persons performing abatement is needed and reasonable to limit the costs

of abatement and reduce the likelihood of creating greater difficulties through an inefficient abatement method. Additionally, there are great incentives to dispose of lead on-site, rather than dispose of the contaminated soil through the household waste stream. Disposing of waste through the household waste stream (at least in Minneapolis) may result in an eventual return of the lead through incineration. Sig Finding 30, below. Subpart 2 is needed and reasonable, as altered. The changes do not constitute a substantial change.

subpart 3 - Soil Cover.
Item A - Living Ground Cover.

23. LFK submitted extensive comments regarding the cost and benefits of the various methods presently in use to cover lead contaminated soil. The MPCA adopted many of this group's suggestions in proposed subpart 3. In other areas, the MPCA varied from this group's suggestions. Everyone agreed that one appropriate method of abatement was to sod the bare soil. The MPCA required in subpart 3(A) that the soil be tilled and raked prior to laying the

sod. LFK objected to that practice, claiming that the lead contaminated dust which could result would negate the benefits of covering the contaminated soil. The MPCA responded that raking and tilling was a necessary element to ensuring that the live cover take hold and thrive, rather than wither. In response to the issue of dust, the MPCA suggested that the bare soil be moistened to prevent dust in the tilling and raking process. The MPCA is correct in its assertion that raking and tilling is needed to ensure that sod will survive and provide the needed cover. Proposed subpart 3(A) is needed and reasonable and does not constitute a substantial change. The MPCA may consider adding language such as "in a manner so as to prevent the production of dust" to the item. This addition would not substantially change the rule and would answer Adams' objection.

Item B - Impervious Cover

24. The MPCA offers the person performing abatement the opportunity to use concrete, asphalt, or other similar material to cover leaded soil in proposed subpart 3(B). No one objected to the use of those materials, but the requirement that the ground be compacted received the same objection as raking and tilling in item A, that is dust will be created which will spread contaminants. If these materials are to be used for cover, however, the ground must be prepared. Otherwise, the covering material will provide incomplete protection through cracking or erosion. No commentator suggested that the dust created through this process would be as harmful as continued contact with the contaminated bare soil. The MPCA has shown that compacting the ground prior to laying concrete or asphalt is needed and reasonable. The new language is not a substantial change.

item C - Other Cover Material.

25. The testimony and post-hearing exhibit of LFK indicated that the least costly alternative to abate bare soil is to cover the portion in violation of the soil lead standard with sand and wood chips. Subpart 3(C) incorporates that experience into the options which may be used to abate soil

lead. The proposed item does not require any preparation to the bare soil prior to application of the pervious matter which covers the lead hazard. LFK suggested that some preparation of the soil, such as sloping or trenching, might be needed to provide proper drainage. The proposed item does not prohibit such preparation, The MPCA is relying upon persons performing abatement to act in a manner to minimize cost when conducting abatement. Thus, the MPCA is not specifying exactly how to carry out the abatement, only requiring that the abatement be successful. This approach, and item C, is needed and reasonable. The addition of item C incorporates a proven abatement method into the proposed rules and does not constitute a substantial change.

Subpart 4 - Soil Removal.

26. The other alternative to covering soil is to remove it. Proposed subpart 4 makes that alternative mandatory when paint chips are visible in the soil. No one objected to requiring removal of soil when it contains visible paint chips. Several commentators suggested that removal include burial on site (when paint chips are not visible in the soil). The commentators based their suggestion on the nature of soil lead contamination, that only the top

few inches of the soil contain significant lead concentration. The deeper soil is well under the standard set in these rules for ppm of lead in soil. The MPCA incorporated this suggested solution in the proposed subpart, with the proviso that the Commissioner of the MPCA may determine that on-site burial will cause contamination of ground water or constitute a hazard to the environment and prohibit on-site burial. The proposed subpart requires that, if that contamination or hazard is determined, the soil to be removed must be disposed of in accordance with proposed rule 4750.0035. Subpart 4 is needed and reasonable to protect the residential environment and promote efficient disposal of contaminated soil.

Subpart 5 - Abatement-implementation.

27. In her testimony at the hearing, Ms. Judy Adams of LFK recounted the difficulties of performing abatements. One of the most difficult problems was to perform the abatement while isolating the contaminated soil from children, replacement soil, and uncontaminated areas. The MPCA has incorporated requirements that these three areas be addressed. The MPCA has not mandated particular methods to accomplish these goals, however. This approach is in keeping with the spirit of these rules. The results are emphasized; how the person performing abatement achieves those results is left open. The MPCA did add a specification that steps and walkways must be hosed off before replacing soil or sod each day. This alteration is intended to restrict the transmission of dust (from soil or mud) into the residence and reduce the potential for placing contaminated soil on top of replacement soil or sod. The MPCA also added item D to the proposed subpart which requires the person performing abatement to keep soil moist during installation of soil cover. The intent of this new language is to reduce dust from contaminated soil during abatement. Subpart 5 is needed and reasonable to ensure that abatements are carried out with a minimum of adverse impact without overly limiting the methods used by persons performing abatements. The changes were suggested by commentators or made to conform with other changes in the

proposed rules and do not constitute substantial changes.

Subpart- 6 - Abatement-Priority.

28. This proposed subpart is left unchanged from the originally proposed rules. The MPCA intends that where any other lead abatement occurs, the abatement of soil take place last. The rationale for this approach is that other abatements will deposit dust or paint chips in the soil and no one should conduct soil abatement twice. LFK objected to the priority in subpart 6, on the ground that lead contaminated soil will be introduced into the residence when persons enter the residence during the soil abatement process. However, the MPCA has placed safeguards to prevent that introduction of contaminants in proposed subpart 5. Further, the methods for abatement of household dust are not as drastic (or expensive) as abatement of contaminated soil. The ordering in the proposed subpart is needed and reasonable.

Subpart 7 - Abatement-Area.

29. Many commentators debated whether abatement should encompass the entire bare soil surface regardless of whether all the area violated the lead standard or whether only that segment which exceeded the 300 ppm standard must

be removed or covered. Mr. Reagan suggested that, since the soil lead level in urban areas is higher than the background lead level in the environment, the total exposure to lead would be reduced by abatement of all bare soil areas on a particular parcel of property if any one part violated the soil lead standard. Further, the possibility exists that soil levels would vary from site to site within the same property. In such an instance, samples might not be taken at every bare soil site and thereby fail to detect some soils in excess of the standard. On the other hand, relatively "clean" soil may show anomalous lead concentrations through source-specific contamination. Exhibit 53 (MLC Exhibit 4, at 222-223). Evidence in the record indicates that the majority of areas in excess of the MPCA standard for many residences are the soils around the foundations of homes. Other areas, such as the mid-yards, do not exceed the 300 ppm soil lead standard. Some commentators indicated that the likelihood of abatement increased with the decrease in cost of the procedure. The MPCA opted for requiring abatement only for those areas which violate the soil lead standard. The proposed subpart is needed and reasonable and comports with the express standard set by these rules. The addition of subpart 7 was in response to comments received through the hearing process and does not constitute a substantial change.

Proposed -Rule 4750.0035 - Disposal of Waste Materials from-Abatement-Projects.

30. Proposed rule 4750.0035 consists of three subparts, each dealing with a material likely to be generated through an abatement project. This proposed rule part was extensively re-written in response to comments from persons at the hearing. Subparts 1 and 3 govern non-soil wastes and essentially state that those wastes will be disposed of in accordance with past practice (for demolition waste) or applicable MPCA requirements (for all other waste). Mr. Leslie Davis of Earth Protector, Inc. supported these two proposed subparts as being the most effective methods presently available (for

disposing of construction waste) and being needed to limit the spread of other contaminants (for other waste). However, Mr. Davis objected to permitting disposal of leaded soil through the household waste stream. His objections centered on the probable end treatment of such waste. In Minneapolis, the waste will either be incinerated or placed in a landfill. Mr. Davis argued that the lead in soil, if incinerated, will become an airborne contaminant. The MPCA acknowledged that the effects of incinerating lead contaminated soil are not presently known. The soil disposal provision is based on the MPCA's interpretation of present state law, which allows a homeowner to remove waste through the household disposal system. If the lead concentration (or presence of other waste) requires that the soil be classified as a hazardous waste, it must be treated accordingly and not disposed of through the household waste stream. Clearly, the MPCA has taken into consideration the possibility of incineration merely altering the form of the lead problem. The next step is to determine what levels of lead may be incinerated with undue adverse environmental impact. Until that is done, the proposed disposal provisions are legally authorized, needed, and reasonable. The change was fully discussed in the hearing and the comments and is not a substantial change.

Proposed, Rule 4750.0040 - Abatement Contractor Duties.

31. This proposed rule part merely requires an abatement contractor to follow the same rules that any person conducting abatement would otherwise have to follow. The MPCA changed "property owner" to "person" to conform the

language of the rule to other changes. The MPCA should also delete "who is require to undertake" and replace it with "performing" so as to conform the language of the proposed rule part to other changes in the rule. Failure to do so, however, does not constitute a defect in the proposed rules. No commentators objected to this provision. None of the changes is a substantial change. The proposed rule part is needed and reasonable to prevent avoidance of the required abatement procedures.

32. As discussed in Finding 18, above, the action which initiates the enforcement process of these rules was the subject of diverse comments. The MPCA has added rule part 4750.0045 to the proposed rules to respond to that debate. The MPCA's position is that local boards of health are not authorized by Minn. Stat. § 144.874, subd. 3 to issue abatement orders regarding soil lead. However, the MPCA recognizes that other enforcement authority may be available to local bodies of government. The proposed rule part makes clear that the lack of an enforcement program in the MPCA rules is not meant to preclude enforcement of the soil lead standard by local units of government. Of course, any action undertaken by a local unit of government must be within that entity's authority, but that is not a matter for this rulemaking proceeding. The proposed rule part is needed and reasonable. Since it only clarifies the MPCA's intent regarding its adopted standard and does not affect any substantive rights or responsibilities of any part of the regulated public, the addition of this language does not constitute a substantial change.

Proposed Rule 4750.0050 , Variance.

33. Minn. Stat. § 144.878, subd. 3 requires the Commissioner of the MPCA to provide a variance procedure to allow the use of innovative procedures to conduct lead abatement. The MPCA proposed this rule part to comply with that statutory requirement. In this rule part, the MPCA references all applications for variances to the general variance procedure used by the

agency. This procedure, codified at Minn. Rule 7000.0700 requires a written application, Commissioner review of the application, public notice, a mailing of the public notice, a circulation of the public notice, an agency decision and a notification of the decision, together with other provisions. No one objected to the variance procedure. The proposed rule part is needed and reasonable to permit variance applications and solicit public comment on each proposed variance.

In spite of the foregoing finding of need and reasonableness, however, a review of the procedural steps and depth of public involvement suggests that the process may become a burden on the agency when the relative size and scope of each variance request is only a single residence, apartment building, or playground. The MPCA may wish to consider an expedited process which reduces the scope of public involvement to the level of each affected neighborhood and a particular mailing list of persons interested in lead contamination issues, rather than the entire mailing list of the MPCA and the entire county where the variance would occur. See Minn. Rule 7000.0700, subds. 6 and 7. A change of that nature to the variance process at this point in the rulemaking proceeding cannot be made since it would constitute a substantial change. The

notice rights of persons interested in variances (both pro and con) would necessarily be affected by any change in the scope of the variance procedure. Any change in the variance procedure must be done through the full rulemaking process to provide adequate notice to the public of any potential change of scope for this process.

The MPCA made several changes in proposed rule part 4750.0050 to conform the language of the rule to other changes in other rule parts. Those changes do not constitute a substantial change.

Based upon the foregoing Findings of Fact, the Administrative Law Judge makes the following:

CONCLUSIONS

1. The Minnesota Pollutions Control Agency (MPCA) gave proper notice of this rulemaking hearing.

2. The MPCA has substantially fulfilled the procedural requirements of Minn. Stat. §§ 14.14, subs. 1, 1a and 14.14, subd. 2, and all other procedural requirements of law or rule so as to allow it to adopt the proposed rules.

3. The MPCA has demonstrated its statutory authority to adopt the proposed rules, and has fulfilled all other substantive requirements of law or rule within the meaning of Minn. Stat. §§ 14.05, subd. 1, 14.15, subd. 3 and 14.50 (i) and (ii).

4. The MPCA has demonstrated the need for and reasonableness of the proposed rules by an affirmative presentation of facts in the record within the meaning of Minn. Stat. §§ 14.14, subd. 2 and 14.50 (iii).

5. The additions and amendments to the proposed rules which were suggested by the MPCA after publication of the proposed rules in the State Register do not result in rules which are substantially different from the proposed rules as published in the State Register within the meaning of Minn.

Stat. § 14.15, subd. 3, and Minn. Rule 1400.1000, subp. I and 1400.1100.

6. Any Findings which might properly be termed Conclusions and any Conclusions which might properly be termed Findings are hereby adopted as such.

7. A finding or conclusion of need and reasonableness in regard to any particular rule subsection does not preclude and should not discourage the MPCA from further modification of the proposed rules based upon an examination of the public comments, provided that no substantial change is made from the proposed rules as originally published, and provided that the rule finally adopted is based upon facts appearing in this rule hearing record.

Based upon the foregoing Conclusions, the Administrative Law Judge makes the following:

RECOMMENDATION

IT IS HEREBY RECOMMENDED that the proposed rules be adopted consistent with the Findings and Conclusions made above.

Dated this 28th day of December, 1990.

ALLEN E. Giles
Administrative Law Judge

Reported: Tape Recorded; No Transcript Prepared.