MINNESOTA

STATE GOVERNMENT

# ISSUES

Executive Branch Policy Development Program

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# LEAD TASK FORCE
# FINAL REPORT AND RECOMMENDATIONS

December 19, 1984

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APPENDIX*



* Appendices are not enclosed with report. To obtain a copy of the appendices please contact Mike Robertson of the Pollution Control Agency.

Michael Robertson - Lead Force Chairman
Energy/Environment/Resources Subcabinet

Our goal is to review the potential hazards posed by various sources of lead and to develop recommendations for a unified approach to protecting public health from lead. Presented below are our recommendations. The body of our report discusses each at greater length. Funding sources are also discussed in the body of this report.

## EXECUTIVE SUMMARY

### LEADED GASOLINE

Our recommended course of action is to develop legislation that equalizes the prices of leaded and unleaded gasoline to remove the incentive for misfueling. The price difference is currently about six cents per gallon. A six cent per gallon excise tax on leaded gasoline would generate revenue of about $41,280,000 to $46,980,000 at the present estimated use of leaded gasoline. Under the Minnesota Constitution, this revenue has to be used for trunk highways.

ANTITAMPERING

Our recommendation is to develop legislation to require that the seller of any used motor vehicle certify that there has been no tampering with the pollution control equipment on the motor vehicle. This would be analogous to, and combined with, the existing odometer certification. Some cost would be involved in changing the odometer certification form to include the antitampering certification as well as some enforcement cost.

HOUSING CODES

Our recommendation is to review and revise, as necessary, state and local housing codes to assure that they address leaded paint hazards. The city codes of Minneapolis and St. Paul already address leaded paint and could be used as guidelines. Enforcement costs would probably fall on either local health departments or local building inspection departments.

GASOHOL

Our recommendation is to increase the tax advantage for gasohol to encourage use of alcohol as an alternative to lead and other toxic gasoline additives. At estimated 1984 demand for gasohol, a two cent tax break would cost about $64,000. The current tax advantage for gasohol is four cents per gallon. Other states provide tax advantages ranging from zero to sixteen cents per gallon.

SANDBLASTING

Our recommendations are: 1) that the Minnesota Pollution Control Agency revise Minnesota Rule 7005.0550, Preventing Particulate Matter From Becoming Airborne, so that sandblasting of houses and buildings covered with leaded paint is more stringently controlled; and 2) that the Minnesota Department of Transportation study its "Guidelines for Bridge Maintenance Painting" to investigate using wet sandblasting of bridges covered with leaded paint. The first recommendation would involve hearing costs of about $10,000. The second might increase maintenance costs if ultimately made standard procedure.

HEALTH SCREENING

Our recommendations are to extend and to coordinate the screening efforts for undue lead absorption in children so that actual health risks can be assessed and so that environmental sources of lead can be identified. Existing screening efforts are all conducted as part of other health programs by various health care agencies that function independently. Coordination of these efforts by the Minnesota Department of Health would improve data collection and avoid duplication of effort. A screening program should be systematically provided for preschool children at risk. Where undue lead absorption in children is found, response should include medical treatment, as appropriate, and an investigation of the source of lead. Where the Department of Health finds a cluster of cases of undue lead absorption in an area, the Department should notify the Minnesota Pollution

Control Agency so that an investigation of possible environmental lead sources such as contaminated soil can be targeted to the area of interest. Clean up costs for identified lead sources would depend on the type of source (e.g., leaded paint in housing, lead contaminated soil in play areas) and on the number and extent of areas actually identified.

SOIL LEAD

Our first recommendation is to establish a program at the Minnesota Pollution Control Agency to identify lead-contaminated soil so that health screening can be directed toward children in the area to determine whether an actual health hazard is associated with the contaminated soil. If an association is found between soil lead and undue lead absorption in children, then the affected children should be medically treated, as appropriate, and the contaminated soils should be made permanently inaccessible. Levels of soil lead and of blood lead at which remedial action should be taken are discussed in the body of this report.

Our second recommendation is to establish a program to determine the lead content of soil suspected of being contaminated so that clean up can begin to prevent potential health hazards from becoming reality. For various reasons, existing contaminated soil may not have an associated actual health hazard because children are not exposed under current circumstances. However, if circumstances change, then a hazard may develop. In addition, chronic low level effects of lead toxicity are not usually identified as being caused by lead. Contaminated soil should be

made permanently inaccessible. Levels of soil lead at which remedial action should be taken are discussed in the body of this report.

The Pollution Control Agency would incur hearing costs of about $10,000 in setting a soil lead standard to define "lead-contaminated soil". In addition to the above direct hearing costs, additional staff resources would be required to develop technical support for adoption of rules. Clean-up costs would depend on the extent of areas actually determined to need clean-up.

LEAD SHOT

Our recommendation is to ban the use of leaded shot for waterfowl hunting with 12 and 20 gauge shotguns by the 1987 hunting season so that waterfowl and predators are protected from lead poisoning. This recommendation could be done either by an order of the Commissioner of the Department of Natural Resources or by legislation.

PUBLIC EDUCATION

Our recommendation is to establish public and professional education programs at the Health Department for leaded paint and at either the Pollution Control Agency or Transportation Department for leaded gasoline. These programs would be intended to counter ignorance about lead.

LEAD SOLDER

Our recommendation is that the Department of Health should complete its study to determine if the use of lead-based solder in new plumbing is causing water contamination problems. If so, the Department should move expeditiously to control lead contamination in drinking water through appropriate remedial action.

WORKPLACE LEAD

Our recommendation is that the Department of Labor and Industry review the Minnesota OSHA standard for lead and, if appropriate, revise this standard. The composition of the Lead Task Force resulted in focusing on children's exposure to environmental sources of lead to the exclusion of adults and of workplace sources of lead.

## LEAD TASK FORCE

| | |
|---|---|
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## II. BACKGROUND

Scientific and public concern about health hazards due to environmental lead has increased in recent years. Health effects have been found at lower blood lead levels than previously and more data has been collected on environmental lead contamination. The Natural Resources Defense Council and the Lead Coalition have pushed for a ban on leaded gasoline at the national and state levels, respectively, because combustion of leaded gasoline causes about 85% of lead emissions into the ambient air.

In response to the gasoline issue, the Minneota Legislature asked for a report on lead by February 1, 1984, from the Minnesota Department of Health. Based on that report, the Legislature passed a resolution signed by Governor Perpich on April 24, 1984, that called on Congress and the U.S. Environmental Protection Agency (EPA) to ban leaded gasoline or to allow the states to do so. The Clean Air Act currently pre-empts states from regulating fuels or fuel additives. On June 26, 1984, the Minnesota Pollution Control Agency Board adopted a petition that called on EPA to initiate rulemaking to ban leaded gasoline. Neither Congress nor EPA has taken final action.

On September 24, 1984, Governor Perpich directed Ray Bohn, as Chair of the Energy/Environment/Resources Subcabinet, to conduct a coordinated investigation of the sources of lead exposure in Minnesota and to propose ways in which state government can prevent further lead pollution and protect public health. In response to this directive, the Lead Task Force was formed with representatives from six state agencies. The charge to the Lead Task Force was to

review the potential hazards posed by various sources of lead and to develop recommendations for a unified regulatory approach to protect public health from lead.

## III. FUNDING SOURCES

The budgetary implications of the recommendations run the gamut from generating substantial revenue to possibly costing substantial revenue, depending upon how much remedial action is actually found to be needed. Funding sources would have to be identified for recommendations that require expenditures.

The recommendation to impose a six cent per gallon excise tax on leaded gasoline to equalize its price with that of unleaded gasoline would generate $41,280,000 to $46,980,000 based on estimated gasoline consumption for calendar year 1984 and allowing for agricultural tax refunds. This revenue would decline as the use of leaded gasoline declines and ultimately reaches zero, probably in 1995.

The Minnesota Constitution requires gasoline excise tax revenue to be used only for trunk highways. Whether revenue from a gasoline sales tax is similarly restricted is arguable and would probably be decided by the Minnesota Supreme Court, according to a 1983 memo from an Assistant Attorney General to the Commissioner of Revenue which is in the Appendix to this report. (See the information provided by the Department of Energy and Economic Development.) The Lead Task Force recommends that a six cent per gallon excise tax be imposed on leaded gasoline and that other revenue sources be used to fund those lead abatement recommendations that require expenditures.

An alternate source of funding lead abatement would be the motor vehicle sales tax. This tax grossed $179,218,000 in fiscal year (FY) 1984 with refunds of $200,000. The gross is up from $103.1 million in FY 1982 and $123.9 million in FY 1983. Refunds do not vary much. Although this revenue previously went into the general fund, existing legislation shifts the revenue into the highway user and transit assistance funds over four biennia, starting in FY 1984. Also related to motor vehicles are various fees including the license and registration fees, among others. These fees generated a total of about $18 million in FY 1984 with most of the revenue going to the highway user fund.

## IV. RECOMMENDATIONS

### Leaded Gasoline

The Task Force was unanimous that State government should maximize every opportunity to prod federal action toward reduction of lead emissions from the combustion of leaded gasoline. However, Section 211 of the Clean Air Act pre-empts states from regulating fuels or fuel additives and both the Governor and Legislature are already on record with Congress and the EPA as favoring a ban on leaded gasoline.

More directly subject to State control are lead emissions due to misfueling, i.e., the use of leaded gasoline in cars designed for unleaded gasoline. Based upon an EPA survey in Minnesota, at least 10% of cars designed for unleaded gasoline are being misfueled. Two incentives for misfueling are the lower cost of leaded gasoline and the common but mistaken belief that lead is

needed for proper car performance. Leaded gasoline costs less than unleaded gasoline partly because organic lead additives are the cheapest means of increasing octane and partly because retailers use leaded gasoline as a "loss leader". The octane rating of gasoline affects car performance but lead additives are not the only means of increasing octane. Other means include additional refining of gasoline without toxic additives, using alcohols which burn very cleanly but which have solvent properties that may cause problems, and using various other additives that are less toxic than lead additives. Another basis for the belief that lead is needed is the lubricating effect of lead deposits on exhaust valves. However, this lubrication is only needed for pre-1971 cars and some other vehicles, and then only under heavy load or illegally high speed.

Lead deposits also "poison" catalytic converters and significantly increase emissions of carbon monoxide, hydrocarbons, and nitrogen oxides. This potentially increases the burden on cities to meet the carbon monoxide ambient standard and on industry to meet the ozone ambient standard (hydrocarbons are a precursor for ozone formation). Although the ambient standard for nitrogen oxides has not been violated in Minnesota, these pollutants have been implicated in acid rain.

Since Minnesota is an agricultural state, agricultural equipment also warrants discussion. In 1982, 142.8 million gallons of gasoline was used in agriculture which was less than half of the 288.7 million gallons used in 1963. This twenty year decline in gasoline use was accompanied by an increase in diesel fuel use from

70.7 million gallons in 1967 to 158 million gallons in 1982. All new combines and tractors have had diesel engines for at least five years. Larger tractors have been exclusively diesel for at least ten years.

Although exact figures are not available, the Department of Agriculture believes that almost all of the gasoline used on farms is leaded gasoline. Older gasoline powered combines and tractors are all designed for leaded gasoline. Trucks with a gross vehicle weight of 8,600 pounds or more are still being designed to use leaded gasoline.

Our recommendation is to impose an excise tax on leaded gasoline of six cents per gallon to remove the cost incentive for misfueling. The budgetary implications of this were discussed previously in Funding Sources.

Antitampering

Another approach to the misfueling problem is to discourage tampering with the pollution control systems on cars. The fill pipes for gasoline tanks on cars designed for unleaded gasoline have a physical restriction to admit only the smaller diameter nozzles used to pump unleaded gasoline. Tampering with this restriction to admit the larger diameter leaded gasoline nozzles is commonly done to facilitate misfueling. In one survey, this form of tampering accounted for over 80% of the tampering found.

Our recommendation is to require that the seller of any used motor vehicle certify that there has been no tampering with any of the pollution control equipment on the motor vehicle. This would

be analogous to, and combined with, the existing odometer certification. Some cost would be involved in changing the odometer certification form to include the antitampering certification as well as some enforcement cost. (A trade group representing used car dealers has informally supported this certification because of concern that dealers could be held liable for tampering done by customers.) This certification would help reduce carbon monoxide, hydrocarbons, and nitrogen oxides emissions in addition to lead emissions.

Tampering could also be discouraged by outlawing the sale of devices (such as so-called "test tubes") used to defeat pollution control systems. Test tubes are essentially sections of exhaust pipe marketed as a means of determining whether a catalytic converter has become partially plugged which would result in backpressure on the engine and disrupt performance. A completely plugged converter would stop the engine. To perform this test, the converter is replaced with a test tube and the car driven to observe if improvement in performance occurs. Theoretically, the converter is reinstalled after the test. In reality, the test tube becomes a permanent replacement in the exhaust system for the converter. This is a violation of Minn. Rule 7005.1190. In addition, California reached a settlement with a manufacturer of test tubes to stop sales in California because consumer fraud is implicit in test tubes. The test can be done without the test tube because removing the converter is all that is needed to observe any improvement in performance. The Attorney General's staff is looking into this.

Housing Codes

Although acute lead poisoning has become relatively rare, the primary cause of the remaining incidence is usually attributed to the ingestion of leaded paint by children. (A notable exception was the lead in a folk medicine used by the Hmong.) Current federal regulations limit the lead content of most new paints to 0.06% but the paint in many homes built before 1950 contains up to 20-30% lead. Statewide data does not exist on the number or proportion of homes which still have lead painted surfaces, but the St. Paul Division of Public Health has estimated that 28,000 structures containing 40,000 dwelling units in St. Paul were built before 1950. Both St. Paul and Minneapolis have ordinances prohibiting a lead content greater than 0.5% on residential surfaces but houses are generally inspected for lead paint hazards only after cases of undue lead absorption have occurred.

Our recommendation is to review and revise, as necessary, state and local housing codes to assure that leaded paint hazards are addressed. Enforcement costs would probably fall on either local health departments or local building inspection departments. State Community Health Services subsidy funds provided to local boards of health may be used for environmental inspections. If additional funds were available, the State Department of Health could expand its support to local health staff.

Gasohol

As previously mentioned, lead additives are the cheapest way of increasing octane but are not the only way. Alcohols, especially ethanol, are also used to increase octane and, unlike other octane boosters, burn very cleanly. Alcohols have different solvent properties than gasoline and may dissolve deposits in the fuel line which may then clog the fuel pump. This could be a problem in vehicles that have been in use long enough to have acquired deposits. Prevention of deposit formation in new cars would not be a problem.

The existing four cent per gallon alcohol fuels tax credit has not markedly increased use of that fuel in Minnesota. An estimated 3.2 million gallons of gasohol will be used in calendar 1984. However, an additional two cent per gallon tax credit is likely to make alcohol blending more cost-effective in many applications where it is presently more costly than leaded gasoline. The cost of an additional two cent per gallon tax credit would be $64,000 based on 1984 estimated consumption. This cost would increase as gasohol use increases.

Our recommendation is to increase the alcohol fuels tax credit to encourage use of alcohol as an alternative to lead and other toxic gasoline additives. Other states provide tax advantages from zero to sixteen cents per gallon and an additional two cent credit to a total of six cents is well within this range, although the optimium credit for Minnesota is not obvious.

component of paint prior to 1950 and many homes still have such

lead-based paint. The use of newer, low-lead paints to cover old paint is not a reliable control because deterioration of the underlying paint can result in peeling or flaking. Removal of the old paint is necessary. Sandblasting is one means of removing old paint which generates small paint particles and which can scatter these particles, thereby, potentially exposing the public to lead.

Our recommendations are: 1) that the Minnesota Pollution Control Agency revise Minnesota Rule 7005.0550, Preventing Particulate Matter From Becoming Airborne, so that sandblasting of houses and buildings covered with leaded paint is more stringently controlled; and 2) that the Minnesota Department of Transportation study the feasibility of using wet sandblasting rather than dry sandblasting for bridges covered with leaded paint. If feasible, this would also reduce general dust from bridge maintenance work. However, since wet sandblasting could result in lead contaminated water that could be more difficult to control than dry paint dust, we do not recommend that the Department revise its "Guidelines for Bridge Maintenance" without first studying the impacts of wet sandblasting.

Health Screening

The population at most risk to lead toxicity are children from six months to five years of age. Children have higher caloric requirements per body weight. Children are believed to absorb about 50% of ingested lead whereas adults absorb only about 10% of ingested lead. Children ingest potentially contaminated material because of normal mouthing activity and pica which adults don't do. Therefore, health screening of preschool children for undue lead absorption is an appropriate way of identifying existing or incipient lead toxicity.

Our recommendations are to extend and to coordinate the screening efforts for undue lead absorption in children so that actual health risks can be assessed and so that environmental sources of lead can be identified. The Department of Health should determine the order of priority for groups to receive blood lead screening and the blood lead level at which remedial action is needed. The Center for Disease Control recommends annual blood lead screening for all children nine months to six years of age in the following order:

1. 12 - 36 months, living in older, dilapidated housing;
2. 9 months - 6 years, siblings, housemates, playmates of children with identified lead toxicity;
3. 9 months - 6 years, living in older, dilapidated housing;
4. 9 months - 6 years, whose parents or household members participate in a lead related occupation or hobby;
5. 9 months - 6 years, living near lead smelters, processing plants, highways with heavy traffic, or near hazardous sites with lead;
6. 12 - 36 months (all children); and
7. 9 months - 6 years (all children).

The Department should consider this order and the available resources in establishing priorities.

The Center for Disease control recently proposed lowering its definition of "elevated blood level" from 30 to 25 micrograms of lead per deciliter (ug/dl) of whole blood. Since some effects are observed down to 10 ug/dl, the Department should consider whether 25 ug/dl is the appropriate level at which remedial action is needed.

Existing screening efforts are all conducted as part of other health programs by various health care agencies that function independently. Coordination of these efforts by the Minnesota Department of Health would improve data collection and avoid duplication of effort. A screening program should be systematically provided for preschool children. Where undue lead absorption in children is found, response should include medical treatment, as appropriate, and an investigation of the source of lead. Where the Department of Health finds a cluster of cases of undue lead absorption in an area, the Department should notify the Minnesota Pollution Control Agency so that an investigation of possible environmental lead sources such as contaminated soil can be targeted to the area of interest. Clean up costs for identified lead sources would depend on the type of source (e.g., leaded paint in housing, lead contaminated soil in play areas) and on the number and extent of areas actually identified.

Soil Lead

Soil sampling done on a research basis has shown that urban soil is widely contaminated with lead. This lead is primarily from combustion of leaded gasoline although some industrial sources exist in Minnesota. Children can be exposed to lead-contaminated soil in play areas or yards, and can be expected to ingest some of this soil because of normal mouthing activity or pica. Many soil samples have been analyzed that contain lead in concentrations far above the concentration that would qualify it as hazardous waste.

Our first recommendation is to establish a program at the Minnesota Pollution Control Agency to identify lead-contaminated soil so that health screening can be directed toward children in the area to determine whether an actual health hazard is associated with the contaminated soil. If an association is found between soil lead and undue lead absorption in children, then the affected children should be medically treated, as appropriate, and the contaminated soils should be made permanently inaccessible.

Our second recommendation is to establish a program to identify lead-contaminated soil so that clean up can begin to prevent potential health hazards from becoming reality. For various reasons, existing contaminated soil may not have an associated actual health hazard because children are not exposed under current circumstances. However, if circumstances change, then a hazard may develop. In addition, chronic low level effects of lead toxicity are not usually identified as being caused by lead. Contaminated soil should be made permanently inaccessible.

The health screening recommended in the first recommendation would be part of the screening program recommended above, as would the cost. The Pollution Control Agency would incur hearing costs of about $10,000 in setting a soil lead standard to define "lead-contaminated soil". Existing hazardous waste rules establish 600 parts per million as the lead concentration at which wastes are considered hazardous. The Pollution Control Agency should determine whether the level would adequately protect children from lead contaminated soil. In addition to the above direct hearing costs, additional staff resources would be required to develop technical support for adoption of rules. Clean-up costs would depend on the extent of areas actually determined to need clean-up.

Lead Shot

Th U.S. Fish and Wildlife Service has estimated that 3,000 tons of lead shot pellets are deposited annnually in the United States. Geese and ducks pick up lead pellets as food or grit and these pellets are ground up by the gizzard which allows for absorption in the digestive system. Sublethal doses can impair reproduction and lethal doses kill an estimated 1.5 to 3.5 million waterfowl. Ingestion of lead contaminated waterfowl by predators such as eagles causes various degrees of poisoning up to and including death of the predator.

Steel shot is nontoxic and the only ballistically suitable substitute for lead shot that has been developed to date. Steel shot has been available since 1973 and has been required on some public hunting areas since 1976. The initially large difference in

cost between steel and lead shot has diminished so that steel is now within 20 percent of the cost of comparable lead shot. The Department of Natural Resources has supported the transition from lead to steel shot for waterfowl hunting and continues to do so.

Our recommendation is to require the use of steel shot for waterfowl hunting with 12 and 20 gauge shotguns by the 1987 hunting season so that waterfowl and predators are protected from lead poisoning. This recommendation could be implemented either by an order of the Commissioner of the Department of Natural Resources or by legislation.

Public Education

Based on Minnesota Pollution Control Agency and Department of Health experience, much of the public is misinformed or uninformed about lead. For example, many people mistakenly believe that their old cars will not run on unleaded gasoline. Both the public and health care professionals are inadequately informed about sources of lead exposure, potential health effects, and the means of reducing exposure.

Our recommendation is to augment public and professional education programs at the Department of Health and to establish a public education program at either the Minnesota Pollution Control Agency or the Department of Transportation to specifically deal with leaded gasoline.

Lead Solder

In four states; Delaware, Oregon, Washington, and Wisconsin; unacceptably high levels of lead have been detected in water drawn from newly constructed copper plumbing systems in which lead solder was used to connect pipe sections. These states and several cities have responded to lead solder. The Department of Health began a study on October 15, 1984, to determine if similar action is warranted in Minnesota. The Department plans to base its conclusions on tests of water samples from new plumbing systems in about 50 communities over a three-month period.

Our recommendation is that the Department of Health should complete its study to determine if the use of lead-based solder in new plumbing is causing water contamination problems. If so, the Department should move expeditiously to control lead contamination in drinking water through appropriate remedial action.

Workplace Lead

The deadlines for this report and the composition of the Lead Task Force resulted in focusing on children's exposure to environmental sources of lead to the exclusion of adults and of workplace sources of lead. Although the population at most risk to lead toxicity is indeed children, the Task Force believes that concern for adults is also justified. Our recommendation is that the Department of Labor and Industry review the Minnesota OSHA standard for lead and if appropriate, revise this standard.

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