

THOUGHTS ON ACID RAIN

Acid rain is a serious problem with disastrous effects. Each day this serious problem increases, many people believe that this issue is too small to deal with right now this issue should be met head on and solved before it is too late. In the following paragraphs I will be discussing the impact has on the wildlife and how our atmosphere is being destroyed by acid rain.

CAUSES

Acid rain is a cancer eating into the face of Eastern Canada and the North Eastern United States. In Canada, the main sulphuric acid sources are non-ferrous smelters and power generation. On both sides of the border, cars and trucks are the main sources for nitric acid (about 40% of the total), while power generating plants and industrial commercial and residential fuel combustion together contribute most of the rest. In the air, the sulphur dioxide and nitrogen oxides can be transformed into sulphuric acid and nitric acid, and air current can send them thousands of kilometres from the source. When the acids fall to the earth in any form it will have large impact on the growth or the preservation of certain wildlife.

NO DEFENCE

Areas in Ontario mainly southern regions that are near the Great Lakes, such substances as limestone or other known antacids can neutralize acids entering the body of water thereby protecting it. However, large areas of Ontario that are near the Pre-Cambrian Shield, with quartzite or granite based geology and little top soil, there is not enough buffering capacity to neutralize even small amounts of acid falling on the soil and the lakes. Therefore over time, the basic environment shifts from an alkaline to a acidic one. This is why many lakes in the Muskoka, Haliburton, Algonquin, Parry Sound and Manitoulin districts could lose their fisheries if sulphur emissions are not reduced substantially.

ACID

The average mean of pH rainfall in Ontario's Muskoka-Haliburton lake country ranges between 3.95 and 4.38 about 40 times more acidic than normal rainfall, while storms in Pennsylvania have rainfall pH at 2.8 it almost has the same rating for vinegar.

Already 140 Ontario lakes are completely dead or dying. An additional 48 000 are sensitive and vulnerable to acid rain due to the surrounding concentrated acidic soils.

ACID RAIN CONSISTS OF....?

Canada does not have as many people, power plants or automobiles as the United States, and yet acid rain there has become so severe that Canadian government officials called it the most pressing environmental issue facing the nation. But it is important to bear in mind that acid rain is only one segment, of the widespread pollution of the atmosphere facing the world. Each year the global atmosphere is on the receiving end of 20 billion tons of carbon dioxide, 130 million tons of sulfur dioxide, 97 million tons of hydrocarbons, 53 million tons of nitrogen oxides, more than three million tons of arsenic, cadmium, lead, mercury, nickel, zinc and other toxic metals, and a host of synthetic organic compounds ranging from polychlorinated biphenyls(PCBs) to toxaphene and other pesticides, a number of which may be capable of causing cancer, birth defects, or genetic imbalances.

COST OF ACID RAIN

Interactions of pollutants can cause problems. In addition to contributing to acid rain, nitrogen oxides can react with hydrocarbons to produce ozone, a major air pollutant responsible in the United States for annual losses of \$2 billion to 4.5 billion worth of wheat, corn, soybeans, and peanuts. A wide range of interactions can occur many unknown with toxic metals.

In Canada, Ontario alone has lost the fish in an estimated 4000 lakes and provincial authorities calculate that Ontario stands to lose the fish in 48 500 more lakes within the next twenty years if acid rain continues at the present rate. Ontario is not alone, on Nova Scotia's Eastern most shores, almost every

river flowing to the Atlantic Ocean is poisoned with acid. Further threatening a \$2 million a year fishing industry.

THE DYING

Acid rain is killing more than lakes. It can scar the leaves of hardwood forest, wither ferns and lichens, accelerate the death of coniferous needles, sterilize seeds, and weaken the forests to a state that is vulnerable to disease infestation and decay. In the soil the acid neutralizes chemicals vital for growth, strips others from the soil and carries them to the lakes and literally retards the respiration of the soil. The rate of forest growth in the White Mountains of New Hampshire has declined 18% between 1956 and 1965, time of increasingly intense acidic rainfall. Acid rain no longer falls exclusively on the lakes, forest, and thin soils of the Northeast it now covers half the continent.

EFFECTS

There is evidence that the rain is destroying the productivity of the once rich soils themselves, like an overdose of chemical fertilizer or a gigantic drenching of vinegar. The damage of such overdosing may not be repairable or reversible. On some croplands, tomatoes grow to only half their full weight, and the leaves of radishes wither. Naturally it rains on cities too, eating away stone monuments and concrete structures, and corroding the pipes which channel the water away to the lakes and the cycle is repeated. Paints and automobile paints have its life reduce due to the pollution in the atmosphere speeding up the corrosion process. In some communities the drinking water is laced with toxic metals freed from metal pipes by the acidity. As if urban skies were not already grey enough, typical visibility has declined from 10 to 4 miles, along the Eastern seaboard, as acid rain turns

into smogs. Also, now there are indicators that the components of acid rain are a health risk, linked to human respiratory disease.

PREVENTION

However, the acidification of water supplies could result in increased concentrations of metals in plumbing such as lead, copper and zinc which could result in adverse health effects. After any period of non-use, water taps at summer cottages or ski chalets they should run the taps for at least 60 seconds to flush any excess debris.

STATISTICS

Although there is very little data, the evidence indicates that in the last twenty to thirty years the acidity of rain has increased in many parts of the United States. Presently, the United States annually discharges more than 26 million tons of sulfur dioxide into the atmosphere. Just three states, Ohio, Indiana, and Illinois are responsible for nearly a quarter of this total. Overall, two-thirds of the sulfur dioxide into the atmosphere over the United States comes from coal-fired and oil fired plants. Industrial boilers, smelters, and refineries contribute 26%; commercial institutions and residences 5%; and transportation 3%. The outlook for future emissions of sulfur dioxide is not a bright one. Between now and the year 2000, United States utilities are expected to double the amount of coal they burn. The United States currently pumps some 23 million tons of nitrogen oxides into the atmosphere in the course of the year.

Transportation sources account for 40%; power plants, 30%; industrial sources, 25%; and commercial institutions and residues, 5%. What makes these figures particularly disturbing is that nitrogen oxide emissions have tripled in the last thirty years.

FINAL THOUGHTS

Acid rain is very real and a very threatening problem. Action by one government is not enough. In order for things to be done we need to find a way to work together on this for at least a reduction in the contaminants contributing to acid rain. Although there are right steps in the right directions but the government should be cracking down on factories not using the best filtering systems when incinerating or if the factory is giving off any other dangerous fumes. I would like to express this question to you, the public: WOULD YOU RATHER PAY A LITTLE NOW OR A LOT LATER?