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POVERTY AND POLLUTION

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## POVERTY AND POLLUTION

### INTRODUCTION

It may be appropriate to introduce our discussion by identifying some of the factors that may account for the disproportionate pollution burden borne by the lowest socio-economic strata of our society.

To begin with, poor people are most likely to be the victims of multiple pathways of exposure. Not only are poor people more likely to live in neighbourhoods with poor air quality (as the following discussion will reveal) but in addition are more likely to be employed in industries and at occupational levels that means greater exposure to various industrial chemicals and pollutants. Secondly, poor people are more likely to reside in inner-city neighbourhoods of mixed industrial and residential uses and of poor and inadequate housing stock. This will mean that urban poor children are more likely to be exposed to lead paint, car emissions from arterial roadways, and air emissions from local industry. Their rural counterparts are more likely to be located in proximity to power stations and waste disposal sites.

The third factor which may explain the relationship between poverty and pollution is the lack of resources available to poor people with which to avoid the impacts of pollution. Those resources must be considered both informational and financial. Thus, studies have revealed that the poor are least likely to respond to public health information designed to minimize individual exposure to various toxic substances. They are less financially capable of affording even modest avoidance measures such as water and air purifiers or bottled water.

Another factor that would result in lower income people suffering greater pollution impacts is their relative lack of access to health care services. Here obstacles can be educational,

## AIR POLLUTION

During recent years a number of studies have been conducted to explore the relationship between income and air pollution exposure. A study titled, "Income and Air Quality in Hamilton, Ontario" by Femida Handy offers a good illustration of the thorough and scientific approach that has been adopted to study this relationship.

Using emission and monitoring data of air pollution provided by the Ministry of the Environment, isopleth pattern maps were superimposed on a map of the City of Hamilton. In this fashion, those areas of the city subject to the greatest air pollution impacts were delineated using rate of sulphation, total dustfall and ferrous oxide as air quality indicators.

A similar mapping exercise was then carried out using various socio-economic factors including average family income, household income, rent and housing values. Statistical tables were then constructed in order to make comparisons between the two sets of data in order to determine whether statistically significant correlations existed. The following results were obtained:

- A comparison of sulphation rates with household incomes revealed a strong negative correlation, with the pollution problem worsening significantly for very low income residents. Indeed, for the poorest residents of Hamilton, data revealed that levels of pollution for the study year of 1971 were well in excess of provincial air quality criteria. Conversely, there were no low income census tracks for those areas that did meet provincial air standards.

- A comparison of dustfall and average household incomes revealed a similar relationship as did comparison of ferrous oxide pollution.
- Comparison of pollution levels with average house values or rent similarly revealed a strong negative correlation.

For all categories of pollutants "there existed a pronounced relationship between lower income and higher exposure to pollution levels". The author's work is even more revealing of the relationship between pollution and poverty by virtue of a follow-up study that was undertaken using pollution data for the year 1975, four years later.

The objective of this follow-up was to determine which, if any, socio-economic grouping might be most affected by any change in air pollution levels. Ministry of the Environment monitoring data for 1975 revealed in comparison to earlier monitoring results, an improvement in air quality for sulphur dioxide, a nominal improvement in ferrous oxide levels and a significant deterioration for dustfall. When this new data was plotted against socio-economic factors, the following relationships were determined:

- For sulphation rates, improvement in air quality benefitted lower income groups the most.
- Where air pollution worsened, the impact of that change was borne disproportionately by those of lower income areas.

Ms. Handy's study offers scientific confirmation of the relationship that many would suspect. In carrying out a follow-up comparison, a dynamic analysis was provided that establishes another aspect of the particularly high stakes that lower income people have with respect to air pollution control.

A number of other studies have been undertaken in the United States and elsewhere in Canada. Using similar methodologies, they have consistently established that the poor are hardest hit by bad air quality. Briefly noted:

- A study of air quality in New York by Jeffrey Zupan established a highly significant and positive correlation between four air pollution indicators and low income.
- W.J. Kravant carried out a study that served as a model for Handy's work for the metropolitan area of Washington, D.C. While air quality in that community was, for the year studied, significantly better than for the Hamilton area, the results were virtually the same - pollution was higher in lower income areas.
- Another Canadian exercise undertaken by Frank G. Muller titled, "Distribution of Air Pollution in the Montreal Region" also concluded that there was a clear inverse relation between levels of air quality and income to the disadvantage of the poor. Again, analysis of data over a three-year period substantiated the fact that lower income people were most affected by changes in air quality.

For most of us, a Sunday drive through the low income neighbourhoods of virtually any Canadian city will readily confirm that poor air quality and poverty go hand in hand. Air pollution is more than an aesthetic problem however, and its more insidious effects are far less easy to observe.

Air pollutants cause irritation, damage lung tissue, interfere with respiratory function, cause serious nervous system disease and cancer. The medical literature contains hundreds of articles

and studies detailing the health effects of air pollutants and establishing causal relationships to a variety of health disorders from allergic reactions to lung cancer. While few of these studies examine the socio-economic demography of these adverse health effects, the epidemiological work that has been done in this area confirms the hypothesis that low-income, greater exposure, and adverse effects go hand in hand.

One of the earliest studies to explore this relationship was carried out decades ago in the Los Angeles area. That investigation found that males living in neighbourhoods most polluted by industry suffered 40% more cancer than did males in other parts of the city. Other investigations have been designed to explore the relationship between changes in air quality and adverse health impacts. When air quality improves what beneficial results can be expected and who are the net beneficiaries of those improvements? One of the most extensive studies to be carried out in this regard was conducted by the Carnegie Mellon Institute over a ten year period. That study concluded that a 50% reduction in sulphate and suspended particulates would result in a 4.7% decrease in air pollution related deaths. Calculated as an average for the population as a whole, it is clear that benefits for inner-city poor would be significantly greater.

A recent study undertaken of cancer mortality and socio-economic demographics for the City of Montreal confirms this relationship. The results of that study "indicate a strong, indirect relation between the standardized mortality rates and the socio-economic status in the central city." In the case of lung cancer, the spatial distribution showed the strict gradients of occurrence between the central city and the suburbs.

While factors such as access to health services, occupational exposure and cigarette smoking influence these results, when one recalls the demography of air pollution for the Montreal area,

the conclusions are inescapable. Poverty, increased exposure to air pollution and lung cancer, are clearly linked.

Furthermore, evidence substantiating the proposition that cancer is largely environmental in origin has been growing steadily in recent years with estimates of the proportion of cancers due to environmental exposure ranging from 50% to two-thirds. Those who have studied the phenomena have also concluded that in large measure, these cancers are preventable with constraints being primarily economic and political rather than technical. The lobby against effective regulatory control is well organized, wealthy and comprised of the largest corporations in the world. Those with the most to gain from such initiatives are unorganized and poor. The results of this imbalanced equation were recently described by an EPA Deputy Administrator, Barbara Blum in the following words: "Suburbanites are exposed to less than half of the environmental health hazards of inner-city residents... inner-city poor... suffer to an alarming degree from what are euphemistically known as "diseases of adaption". These are not healthy adaptations, but diseases and chronic conditions from living with bad air, polluted water and continual stress. Hypertension, heart disease, chronic bronchitis, emphysema, sight and hearing impairments, cancer and congenital anomalies are all roughly 50% higher than the level for suburbanites. Behavioural, neurological and mental disorders are about double."

Our experience with citizens groups from low income, inner-city neighbourhoods confirms the validity of these scientific surveys. Over the years, CELA has provided advice to and represented residents of various inner-city and low income neighbourhoods including, South Riverdale, the Junction Triangle and the Niagara Neighbourhood in the City of Toronto. These three neighbourhoods in particular have achieved notoriety because of the severe impacts that pollution from local industry has had on the environment and public health. Each neighbourhood reflects the complete absence of proper planning controls. A brief

consideration of the impacts of lead pollution on the South Riverdale community offers an unfortunately excellent illustration of the very particular impacts of air pollution upon a low income, inner-city neighbourhood. The operations of a lead smelter located in the South Riverdale area and the proximity of the neighbourhood to a major expressway have resulted in substantially elevated levels of lead pollution in that community. The poorer housing of the area also presents an increased exposure risk from leaded paint. Elevated exposure to lead pollution has been similarly documented for the Niagara Neighbourhood located near Bathurst and King Streets in the City of Toronto and in other cities in North America.

A recent extensive survey of blood lead levels in Canadian children has revealed a disturbing but familiar correlation between urban neighbourhoods and substantially higher blood lead levels. Blood lead surveys conducted by the Department of Public Health for the City of Toronto for the South Riverdale neighbourhood however, revealed that for this lead "hot spot" that the disparities were substantially greater and that 18.4% of area children had blood lead levels above the action level of 20 ug/l. This represented in excess of a fourfold increase over provincial averages, which include inner-city neighbourhoods. The results of lead exposure are particularly severe for younger children and can result in permanent impairment including neurological damage.

The costs of pollution in terms of debilitating, chronic and even fatal disease, is staggering as it is unnecessary. The case of lead pollution offers a tragic illustration of one of the less easy to measure impacts on on the poor and particularly upon poor children. Several clinical studies conducted in the United States have drawn a clear link between high blood lead levels and diminished IQ performance.



Thus, for those already suffering from several educational disadvantages, lead pollution offers an additional impediment to the full development of their human potential.

A very recent report to the Toronto Board of Education offers confirmation of this disturbing situation. Commissioned by the Toronto Board of Education, an extensive survey was carried out to explore and identify the effects of pollution on the health, well-being, and educational performance of students and staff. The principal findings of that report concluded that staff and students were being exposed to "many pollutants ... that can affect brain function, learning ability, behaviour and hence education" and that "some students and staff experience acute adverse effects from such exposures".

The authors of this report did not carry out monitoring or other experiments to determine actual exposure or routes or sources of that exposure. Rather an extensive survey of literature was carried out as was a campaign to consult with and solicit comments from those concerned. While no attempt was made to survey the socio-economic variables of pollution exposure, a clear picture readily emerges. Of those schools identified by staff and students and the community, and described by the consultants as being in part "definitely unsafe for some people" the overwhelming majority are located within the lower income and more highly polluted areas of the city.

While air pollution is a serious health hazard for all of the society, once again poverty has imposed greater costs for those least able to use existing laws and regulations or to argue for more stringent emission standards in order to protect their health and community.

Finally, it is important to note that air pollution is by no means an exclusively urban phenomenon. Indeed, the largest point source emitters of many pollutants are associated with large

energy generation and smelting industries that are often located in rural areas. While little study has been done of the demography of the communities that may be impacted by such isolated facilities, there is no reason to expect the relationship of poverty and pollution to be displaced in this context. Indeed, as the discussion of resource management issues which follows will attempt to explore, the impacts of pollution upon rural people can be even more devastating than for their urban counterparts.

#### WATER POLLUTION

"Great Lakes toxicity the continent's worst"

Globe and Mail

Thursday, December 12, 1985

This recent front page story began:

"People living in the Great Lakes region are exposed to more toxic chemicals through food and drinking water than anyone else in North America, a study by U.S. and Canadian scientists has concluded."

Extensive media accounts concerning dioxins seeping from abandoned dumps into the Niagara River or the toxic blob in the St. Clair River offer two topical illustrations of how Great Lakes waters have come to be contaminated by over 2,000 toxic chemicals, many of them known carcinogens. An identification of the nature and scope of the adverse health impacts that have already or may result from such pollution would require a massive epidemiological study of the 37 million people living in the Great Lakes basin who have all become unwitting subjects of a potentially calamitous human experiment involving exposure to a myriad of toxic chemicals.

A study done by the Environmental Defence Fund of carcinogens in the Mississippi River offers a frightening indication of the enormity of impacts that may result. The EDF study examined the cancer mortality rate for New Orleans residents revealing that rate to be 32% higher than the national average. In addition, it was found that the city ranked among the top three U.S. cities with respect to the incidents of kidney cancer, among the top six for cancer of the bladder, among the top nine for cancer of digestive organs and among the top eleven for benign tumours and unspecified cancers. This epidemiological study went on to compare the cancer mortality as between New Orleans residents dependent upon Mississippi water for their drinking supply and New Orleansians whose water came from other sources. It was found that those people who relied upon drinking water from other sources had significantly lower cancer rates.

As an urban phenomenon, water pollution problems threaten everyone who relies upon municipal supplies for drinking water and other uses. While the burden of poor water quality is not subject to the same demographic sorting that has been identified for air pollutants, there are at least three factors that make the impacts of poor water quality more severe for lower income people.

The first is the result of tangible, albeit modest, differences in the quality of drinking water available to lower income neighbourhoods. Thus, older and most often poorer inner-city neighbourhoods are more likely to be serviced by lead pipes thereby contributing to the burden of lead pollution in municipal drinking supplies. In addition, smaller and poorer communities will be unable to afford the sophisticated water treatment facilities necessary to remove the increasingly complex pollutants that have entered our water systems.

Secondly, the burden of exposure to toxins in drinking water will be more severe for those already disproportionately exposed to

pollutants from other sources. Thus, even modest amounts of water pollutants can significantly aggravate already dangerous body burdens that have resulted from air pollution and occupational exposures.

The third factor that may make contaminated water a more serious problem for lower income people is simply the lack of affordable alternatives. The cost of bottled water or in-home water treatment devices makes these avoidance options unavailable to people with subsistence incomes.

Water pollution is obviously not a problem only for those who rely on the Great Lakes for drinking water. Indeed, water quality problems have plagued poor and rural communities unable to afford even basic treatment facilities. This dimension of the problem has perhaps been most severe for Native communities utterly dependent upon government resources in this regard. Further, as we will discuss more fully in the following section, contamination of groundwater supplies is among the more problematic impacts of current waste disposal practices.

The impacts of water pollution for remote communities can be disastrous and destroy not only the health of the community but its economic resource base as well. The most notorious illustration of the profound impacts that water pollution can have is offered by the plight of the Grassy Narrows and White Dog Indian Reserves. The methylmercury pollution of the English Wabigoon River system caused by the operation of an international pulp and paper company (Reed Paper, now International Forest Products) substantially destroyed the resource base upon which these communities depended, and poisoned several bands' members.

While the impacts of water pollution on these communities was particularly severe, the scenario is one that is hardly unique. Elevated levels of dioxin have been found in fish taken from the Rainy River and Northern Ontario. Substantial fish kills have

resulted from spills by other pulp and paper and mining industries. The Serpent River, in northern Ontario, has been contaminated with radioactive wastes from the El Dorado Uranium Mine at Elliott Lake. For both Native and non-Native rural residents for whom water systems represent a life-blood, pollution can have profound adverse economic as well as health impacts.

#### WASTE MANAGEMENT

Over the last decade, waste management has become an increasingly public and controversial issue. As we have come to learn, the impacts of waste disposal endeavours can threaten a community's drinking water, degrade its air quality, dramatically increase heavy truck traffic over local roads, create severe dust, noise and odor problems and negatively affect property values. Inevitably, the impacts of existing waste disposal sites or proposals to establish new ones provoke a heated confrontation between local communities, government and the waste management industry. From Love Canal to the PCB spill near Kenora or deep well disposal under the St. Clair River, our inability to effectively manage both industrial and municipal wastes have left literally thousands of communities wondering about the vulnerability of groundwater supplies to a virtual witches' brew of toxic substances leaching from local waste disposal sites. On hundreds of occasions, individuals and local groups have insisted on monitoring programmes that have disclosed contaminated well water and toxins that put entire groundwater regimes at risk. In our experience, no issue will as readily galvanize a community to action as will the very real and immediate impacts of a local waste disposal problem.

CELA has frequently acted for communities concerned about the impacts of existing sites or proposals to establish new ones. We have successfully argued for the installation of municipal water systems for residents with contaminated wells, settled litigation

for substantial damages due to off-site impacts, persuaded the Ministry of the Environment to order everything from operating conditions to site closure and extensive clean-up operations. Our activities in this regard have ranged from representing a local family concerned with a small municipal landfill to intervening in U.S. Federal Court proceedings concerning one of the worst hazardous waste disposal sites in North America. A substantial portion of requests for advice and assistance continue to concern waste management issues and we expect the trend to continue.

As the whole issue of waste management has become more controversial, the task of identifying and implementing waste disposal options has grown substantially more difficult. Siting a new waste disposal site can become a marathon endeavour spanning several years and taxing the resources of local communities. While technological innovations, like energy from waste facilities, have been developed to obviate the need for landfilling, incineration creates a whole new set of risks including those associated with toxic emissions from facility stacks. Other initiatives such as mobile PCB disposal facilities appear primarily motivated by a desire to mollify local opposition to the siting of permanent facilities. As the following discussion illustrates, one must anticipate increasing pressure to impose the unwanted costs of waste disposal upon those least able to fight them.

Even a preliminary consideration of the demographics of waste disposal suggest that an important dynamic of pollution impacts applies equally as well to waste disposal endeavours as to air and water pollution. That is, that the environmental costs of the activity are imposed upon those least responsible for creating or contributing to it. One facet of this dynamic is the siting of municipal waste disposal sites in rural areas. Again, the real costs of waste generation are externalized and imposed upon those least able to fend them off. As put in the

submissions of a dairy farmer to the Royal Ontario Commission on the Regulatory Control of Mobile PCB Disposal Technology: "The golden rule of garbage disposal ... is, dump it on your rural neighbour".

When one examines the choice of rural locales, an even more telling pattern emerges. In 1983, the U.S. General Accounting Office (GAO) published a report titled, "Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities". As is clear from its title, this report offered the results of a study of the demographics of waste disposal in several southeastern states. The GAO findings indicated a strong correlation between the location of hazardous waste disposal sites and poor, black rural communities. Of the four sites studied in detail, three were located in predominately black communities with a substantial proportion of local incomes below the poverty line and with lower means incomes than surrounding areas. Unfortunately, there appears to be no Canadian equivalent to the GAO report but there is reason to expect the scenario to be the same in this country as it is in the U.S. Middle and upper income people can afford to avoid areas where waste disposal sites are located and have the resources necessary to exact a substantial political and economic penalty from those who would have the temerity to propose or sanction the siting of a waste disposal facility in their backyard.

As noted, the increasingly difficult task of licensing new facilities should only add to the pressure to site them where local people are least likely to resist. Without the political clout necessary to call local or provincial politicians to task and without the financial resources to use licensing hearings or court actions to challenge unwanted intrusions, a low income, rural community offers a very appealing target.

PART II RESOURCE MANAGEMENTFORESTRY

"We have not inherited the earth from our fathers, we are borrowing it from our children". (Chief Thomas Fiddler and James Stevens to the Royal Commission on the Northern Environment)

The devastation of hardwood forests in Southern Ontario during the 19th century has made forest management issues primarily a concern of the north. Unfortunately, the lessons that 19th century exploitation offer have been largely ignored and in the words of the Armstrong Metis Association:

"The forests to the south of here have been consumed, and now the beast with the endless appetite for trees turns our way. So we will be left with a prairie of stumps and slash."

The mismanagement of Canadian forest resources has had a devastating effect upon this country's most important natural resource base. The potential consequences for the 10% of all Canadians who are said to owe their livelihood to this country's forest products, is disasterous. The very existence of many northern communities depends upon wise management of a resource base that has been seriously eroded by decades of mismanagement and neglect. As destructive and far reaching as these economic impacts may be, they pale beside the price that has already been exacted of the indigenous people of the north.

The devastating consequences of Reed Ltd.'s pulp operations on the Grassy Narrows and White Dog Indian Reserves has already briefly been described as an illustration of the potential scope of mercury pollution of a water system. In the resource management context, it is important to recognize those impacts as one consequence of a monolithic and multinational forest



industry. It is difficult here to neatly summarize the profound and catastrophic impacts of Reeds mills at Dryden, Ontario upon these two Native communities. Perhaps the following introduction to a recent CBC documentary provides some sense of the nature and scope of this tragedy:

"It seems to me that two centuries have passed, and yet I know we moved from the old reserve to this place only twenty years ago. So much has changed. We used to hunt and trap ... and live in the Indian way. Now we are run by white people who don't belong here. They tell us how we should live ... and now the fish are no good and our rivers are full of mercury. I don't like what's happening to us. We don't live in the right way anymore. We are a broken people. For us, it is like living in two worlds. I think I've in twenty years what most people won't see in a hundred."

The impacts of forestry resource exploitation are multi-faceted and threaten the integrity of the entire northern ecosystem and the economic resource base upon which virtually all northern residents rely. While the impact of Reed's pulp and paper operations near Dryden offer an illustration of the impacts associated with one facet of industry practices, the approach adopted to extraction offers another. Thus, clear-cutting and the use of heavy machinery leaves forest soils vulnerable to erosion. Flooding follows with consequent silting of small streams and lakes. Water starvation occurs, watertables drop, low-lying areas become flooded and stagnant. Fish and fur-bearing animal habitats are destroyed and another important resource base for northern peoples is seriously damaged.

Yet another of the environmental impacts associated with present forest resource uses results from the use of pesticides on a large scale to control infestations of mono-stands of timber planted to ease the "forest mining" operations of multi-national resource industries. The adverse impacts of these toxic

compounds effects human health, local birds and animal opulations and pollutes aquatic systems posing a further threat to northern people and the resources upon which they rely.

As is true for other resource management issues, the contest is one that invariably pits the resources of large and often multi-national corporations against often isolated, poor and unsophisticated communities. With respect to forest resources, the life-blood of northern peoples become the spoils for industry whose activities threaten to leave our northern and rural environment a virtual desert.

#### AGRICULTURAL RESOURCES

Food banks are springing up in Canadian cities, and foodlines at soup kitchens lengthening. Food agencies have estimated that 100,000 people in Metro Toronto are in need of food.

Ministry of Environment surveys of well water in southwestern Ontario have revealed an alarming degree of contamination by agricultural chemicals including alachlor. Nursing mothers exposed to this chemical and a client of CELA has been warned to stop breastfeeding and to switch to bottled water.

3.5 million acres of agricultural land has been lost to urban use during the period of 1961 through 1976. This rapid pace of conversion continues.

Pesticide residues in food have increased by over 300% during hte last 15 years. In one small portion of southwestern Ontario draining into the St. Clair River, 2.5 million kilograms of agricultural pesticides were used in 1984. Seventy percent of those pesticides have been identified as environmentally hazardous.

Increasing farm costs, including soaring interest rates in stable or declining markets, have created an economic crisis for Canadian agriculture that threatens the viability of thousands of family farms.

A disease surveillance programme released by the Ministry of Health during August 1985 revealed unexpectedly high increases in the rate of birth defects in parts of southern Ontario. Agricultural pesticides were identified by health officials as a potential cause.

Although many of us would be aware through press accounts and media stories of these and other agricultural stories, few would recognize them as interrelated. Neither would many suspect that our use, and misuse of agricultural resources had created a problem of major environmental and economic proportions. Yet, in the words of the Standing Senate Committee on Agriculture, Fisheries and Forestry:

"Canada is facing the most serious agricultural crisis in its history and unless action is taken quickly, this country will lose a major portion of its agricultural capability."

Loss of farmland due to soil degradation caused in large measure by large-scale corporate Canadian farmers more than \$1 billion per year in farm income.

Deteriorating foodland quality has made increased use of artificial fertilizers and pesticides necessary if yields are to be maintained. This adds to a further deterioration of subsoil structure which in turn requires a more massive infusion of petro-chemical based products creating a vicious cycle which has contributed significantly to the costs of agricultural production while permanently diminishing the productive capacity of Canadian soils.

Ultimately, soil degradation and increasingly, artificial agricultural practices are reflected in deteriorating food quality and negative impacts upon human health. While little work has been done to define the relationship between declining agricultural resources and human health, studies that have been undertaken have identified a downward trend in human and animal health as a result of declining protein, mineral and vitamin food content.

Loss of farmland to urban development continues virtually unabated notwithstanding vague government policies in favour of foodland preservation. Class 1 agricultural lands are more than twice as productive as Class 4 lands and yet the overwhelming proportion of new urban development is taking place on Class 1 farmlands. High quality agricultural land is considerably less abundant than many Canadians might suppose representing approximately only 4% of our current agricultural land base. As foodlands become an increasingly scarce commodity, Canadians are forced to rely to an ever increasing degree upon imported foodstuffs. The cost of food rises - its quality deteriorates.

The wholesale administration of pesticides to agricultural lands and crops has created environmental and human health impacts of potentially disastrous proportions. The brief references noted above to studies implicating pesticides as a cause of rising birth defects and cancer rates offer a frightening indication of the insidious nature of these health impacts. Unlike the work that has been done concerning the economic and social demography of pollution impacts, little effort has been made to assess the consequences for poor people of the crisis in Canadian agriculture that has been briefly sketched above.

As with other environmental problems, the consequences for all of society are staggering. As we have seen for other pollution problems however, there appear to be several indicators that

lower income Canadians and the poor bear the impacts of agricultural resource mismanagement disproportionately.

To begin with, those most immediately and directly affected by the failure to conserve and preserve this natural resource are farm communities, families and workers. With ever increasing regularity farm families are being foreclosed by large financial institutions. When foreclosure does occur, vocation, livelihood and home are all lost. Farm family incomes are chronically lower than are working class industrial incomes and it is trite to note that bankruptcy is not a fate for the financially solvent.

Those who work on farms suffer substantial exposures to a variety of toxic agricultural chemicals. Particularly at risk are migrant farmworkers who, unlike farm owners, move from crop to crop, from pesticide to pesticide, in intimate contact with a variety of toxic pesticides and for much longer periods of time. Migrant farmworkers in Canada, as they are in the United States, are among the poorest working people in society. It is not surprising then, that it is this group that suffers the greatest exposure to a variety of extremely toxic agricultural chemicals. Neither is it surprising, exposure to pesticides is emerging as a major occupational health and safety issue for the United Farm Workers' Union in the United States.

It is becoming increasingly common that the health of entire rural communities have been put at risk by reason of pesticide exposure from airborne sprays and groundwater contamination. Farm family incomes are substantially lower than their urban counterparts, and the majority of Canadian poor live in rural areas and not in urban ghettos. Migrant farmworkers are among the poorest strata of society. Thus, in a rural context, the relationship between lower income and greater environmental impact once again demonstrated once again appears to hold true.

For urban poor, impacts are similarly both economic and physical. We were unable to locate any Canadian investigation of this issue. One American study however, reports the results of an extensive survey of a large number of people in Florida and California. That study found that non-whites had higher pesticide residues than did whites, and the difference was in part attributed to a higher consumption of fatty and organ meats, that is, cheaper cuts of meat, polluted disproportionately with greater concentrations of pesticide residues. This study documents a phenomenon that should be true for all those exposed to more pollutants, from more sources than are middle and upper income people. It would be difficult to determine the proportion of any individual pesticide burden that might be attributable to pesticide residues in food as opposed to pesticide exposure from the use of cockroach spray, or occupational or environmental exposure. Whatever the respective contribution from any source however, again there is a strong indication that is that total exposure is inversely proportionate to income.

For poor people, food is becoming an increasingly scarce commodity and increases in social assistance insurance programmes have not kept pace with increasing food prices. While food may be relatively cheap for most Canadians who can easily afford the \$1,500 to \$2,000 annual food bill, for those living below the poverty line the choice is too often between a pair of shoes, the rent and even modest nutrition. Loss of foodland, soil degradation and greater reliance upon high cost fertilizers and pesticide use hurts all Canadians, but hurts poor Canadians more.

### MINING

Some of the impacts associated with the mining industry have been briefly noted under the headings of water and air pollution. For example, Inco's smelter in Sudbury is the largest point source emitter of sulphur dioxide emissions in North America. Other examples are all too easy to find, uranium mine tailings from

Elliott Lake have made the Serpent Indian River a radioactive hot spot that has denied Native communities that traditionally natural resource. Emissions from Algoma Steel's iron ore mining and smelting operations near Michipicoten, appear to be a significant cause of the failure Indian Band's birch veneer logging operation.

One aspect of the impacts of large resource industries that has not been described yet however, concerns the effects of the boom and bust cycles of these highly exploitative industries that has been described by Jeffrey Weller in the following way:

"The economics of extraction thus develops an atmosphere in which much of the local population feels exploited, under-privileged, alienated and unable to control either their own destiny or that of the region. Local elites play a minor role in the decision-making affecting northwestern Ontario. All they can hope to do is somehow influence those who make the decisions. ... It might be argued that the ability of the region to bring pressure to bear on federal and provincial governments for basic changes in its hinterland status is hampered by the apparent need to apply constant pressure simply to obtain essential services that are provided almost automatically in the metropolitan centre."

### PART III ENERGY

#### A. Socio-Economic Impacts

##### 1. Basic Needs Unmet

Dramatic escalation of energy prices since 1973 have made heating, transportation and lighting service needs an increasingly scarce commodity in our society. The years 1973 through 1980 witnessed a fifteen-fold increase in the price of a

barrel of crude oil with the result that heating fuel bills doubled within the span of two or three years and did so on more than one occasion. Although we are recently enjoying a hiatus, our continuing dependence upon non-renewable and ever-dwindling energy supplies, ensures that the spiral of escalating prices will soon continue its ascent.

The effect upon poor people is immediate by way of rent and transportation cost increases and less indirect by way of contribution to costs of all necessary commodities and by way of negative impact upon the economic well-being of society.

Studies in the United States have revealed that poor people have, during the last decade, had to dedicate an increasing share of limited income to home energy needs. These investigations have revealed that poor people spend 21% of annual income on home energy needs, a percentage which is four times that spent by the average homeowner. The gap is growing, and regulatory, pricing and taxing decisions have been anything but redistributive in their effect. There are losers, and those suffering the most are those with the fewest resources to begin with.

## 2. Impact Upon Spending Priorities

Recent trends in favour of capital intensive, high technology energy mega-projects have, to an ever-increasing degree, robbed capital from endeavours that have traditionally helped the poor, eg. housing, jobs and education. In Ontario, calls for increased spending on social services have often been met with the response that resources are limited. Indeed cutbacks in social service spending, education and health care have been increasingly the order of the day. Our ability to finance programmes that serve or benefit the poor is clearly and directly affected by our public support for and guarantee of Ontario Hydro's debts which represents more than 50% of the province's total debt load.



In our view, this province's spending priorities have been co-opted by a commitment to increasingly capital intensive energy mega-projects that guarantee future increases in energy costs and a continuing expropriation of poor people's options. Again, the effect of Hydro's capital needs are not equitably distributed across our society.

### 3. Rates

Another inequity of the present system that has been highlighted by others is the regressive characteristic of the existing rate structure. Not only does a declining block rate structure encourage consumption, but as well imposes the highest electricity rates upon those who consume the least electricity. Simply stated, those least able to afford electricity subsidize the costs of the largest energy consumers.

An equitable rate structure would, like an equitable tax system, levy proportionately smaller charges upon those least able to pay. A regressive rate structure imposes equal charges against all users regardless of income or their particular ability to participate. A super-regressive rate structure assesses the highest charges against those who can least afford them. Hydro's rate structure is super-regressive.

#### B. Unresponsiveness of Energy Programmes to Needs of the Poor

In many respects, the energy-related problems experienced by poor people are shared with the middle class. Indeed, impacts upon the middle class were so severe during the 70s that governments did respond with various programmes, such as COSP and REAP. However, virtually all of these programmes discriminate against the poor by presupposing that all in society have equal resources to spend on conservation and energy efficiency measures. With respect to the poor tenant, it is clear that the programmes had no impact. Owners of residential, multi-unit buildings were able

to pass increased heating costs directly through to tenants by way of annual rent increases. Should a landlord be inclined to invest in conservation measures, this type of capital expenditure would have been amortized over a number of years. This created a significant disincentive to effect energy conservation or efficiency measures and thereby reduce a tenant's rental costs.

Thus, quite apart from the potential effects upon rates, traditionally conservation programmes have simply been unavailable to the poor and have been of little benefit to them. The answer here is not however, as Hydro implies, to remove the programmes altogether, but rather to design them in a fashion that makes them available to all residents of Ontario regardless of income.

### C. Environmental Impacts

We are all familiar with several of the more notorious environmental impacts associated with our electrical system, such as acid rain and the problems related to high-level waste disposal. Less apparent are other consequences of the current system that, nevertheless, have very serious and inequitable impacts upon certain, and usually poorer, segments of Ontario's population. Thus, the impacts associated with hydro-electric development and the flooding that often attends it, are usually borne by rural or remote communities. For Native people, the dislocation that can result may profoundly disrupt traditional lifestyles and the economic structure of local communities. While the most famous examples here have occurred outside of Ontario, involving James Bay and Churchill and Nelson Rivers hydro-electric projects, similar impacts have occurred in Ontario. If present decisions lead to expanding generation capacity, future projects will no doubt have similar results.

Uranium mining in northern Ontario has also had disastrous impacts upon indigenous communities without the resources necessary to protect themselves from those impacts. Thus, for the residents of the Serpent Indian River Band, the results of mining activities in Elliot Lake have been enormous in terms of the radio active contamination of the Serpent River and the devastation of a large portion of the reserve in consequence of mine-related industry.

The siting of transmission lines also has serious consequences for the unlucky, primarily rural resident whose property is expropriated as a result of the project. Many of the costs associated with such projects are simply externalized. This means that they are not borne by Ontario Hydro consumers generally, but rather by those who by circumstance find themselves in the path of development.

The distribution of impacts associated with coal generation are also revealing. Recent studies have demonstrated the disproportionate impacts of air pollution upon lower income communities. While we are not aware of any investigation of the impacts associated with Ontario Hydro's generation stations in particular, the relationship of low income and air pollution effects has been demonstrated for Ontario. Sulphur dioxide is, of course, one of the major pollutants of concern, as is lead, both of which are products of Ontario Hydro's coal generation. Another interesting discovery, of the work that has been carried out in this regard, is the fact that improvements in air quality disproportionately benefit those with greatest exposure.

It is also interesting to note again that those most exposed to the negative impacts of the electrical system here are those least responsible for creating the problem in the first place. American studies have revealed that those families with incomes in excess of \$16,000.00 a year (1981) consume twice as much electricity and natural gas as those families with incomes below

that income figure. Again, the character and configuration of the present system creates real winners and losers with the losers invariably being lower income Ontario residents.