

## HOW IT IS WITH US

by Ginny Point

The summer solstice has come and gone; each day is a bit shorter than the last. Both Susan Mayo and Susan Holtz are away on holidays now, and I am not in the office very much now either since I am working full-time on the Environmental Law Text Project in another room upstairs. But the office is still quite busy.

We are lucky to have Lorraine King and Lawrence Tummon to manage business while the rest of us are away. In addition to the daily office inquiries, written correspondence and committee meetings, Lorraine and Lawrence are also producing fact sheets on uranium mining, bicycles, and forest management, to name a few.

Before Susan Mayo left on holidays in mid June, the Centre helped organize and participated in a large anti-nuclear rally in Brudenell, P.E.I. Official reports estimated approximately 700 participants in the rally. The event was scheduled to coincide with a meeting of the Council of Maritime Premiers. In addition to the rally and silent march, Susan Holtz and other representatives from the Maritime Energy Coalition had the opportunity for a short meeting with the Premiers. The brief they submitted to the Premiers is included below.

Still on the energy front, the province-wide anti-nuclear petition has met with great success. To date, there are at least 10,000 signatures, and we keep receiving more. Nuclear will also be the topic of one of the floats in the Halifax Natal Day Parade this year. F.A.C.T. (Fundy Area Concerned for Tomorrow) is preparing a huge paper maché white elephant bearing the caption "Point Lepreau". It will be pulled manually by EAC members who represent local taxpayers struggling under the burden of Point Lepreau.

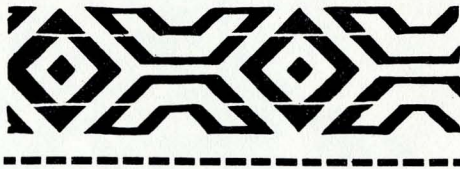
The Urban Committee continues to meet regularly this summer. On behalf of the committee, Lawrence Tummon presented a brief to the CTC hearing regarding the proposed discontinuation of Via Passenger Rail service from Halifax to the Annapolis

Valley. (See page for a copy of the brief submitted.) Also, Betty Pacey and Lorraine King are preparing a pamphlet on the proposed Time Square development on Brunswick Street, which was discussed in the last edition of JUSUN. It will be widely circulated throughout the city prior to the public hearing on August 22, 1979.

The Paper Recycling Committee is proceeding with preliminary work regarding the proposed EAC sponsored paper recycling business for the Halifax area. Once operational, the business should provide a steady source of income for the Centre. Such an operation could be an unrivalled opportunity to help make the Centre financially self-sufficient. We are hoping for support from all EAC members for this challenging undertaking.

Finally, on June 30, 1979, the Centre sponsored a delicious potluck supper and informal panel discussion about the Fisheries. (See write-up below.) This event marks the beginning of a new bimonthly EAC seminar series. Future presentations will focus upon home energy conservation, electricity pricing and urban design, among others. "Common Sense Composting and Sensible Sludge" is the title of the next event to be held in mid August. Hope to see you there.

Well, as Susan Mayo would have said, "And, that's how it is with us."



*We need our huge buildings  
Like the devil needs rain  
We need all those wise men  
To put numbers to our names  
We need all those fools  
Who build their homes on sand  
Not to mention all those mad minds  
Who are destroying the ecology of our land.*  
by Andrew Robichaud

## SUMMER GATHERING

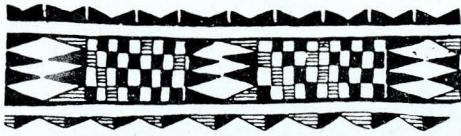
On Saturday, June 30, the annual summer gathering, featuring a potluck supper, took place at the Unitarian Church on Inglis Street. In spite of the fact it was a long weekend, approximately forty people showed up for an evening of films, conversation, punch, potluck, and an informative panel discussion on Fisheries policy and management.

The supper must be termed a success, as people generally outdid themselves on the culinary side, and no one was overheard grumbling about the potluck. Numerous little ones were present, and the fine weather gave them an opportunity to enjoy themselves.

The feature film of the evening was a documentary entitled **Tomorrow is Too Late**, produced by the National Film Board. It gave us a look at problems relating to the management and regulation of Canada's inshore and offshore fisheries, and illustrated the precarious balance between these two areas. We saw some of the different fishing methods used both inshore and offshore and how these relate particularly to the survival and economic stability of the small communities that make up the inshore fishery. Fresh water fisheries and aquaculture were also touched upon, and we were given some idea of their potential contribution to the overall fisheries economy.

The panel discussion was chaired by Peter Wainwright, an oceanographer and marine consultant, and a member of E.A.C. Board of Directors. Panelists included Fred Windsor of the Maritime Fishermen's Union; Janni Jansen of D.P.A. Consulting Ltd.; and Dr. Colin Duerdin, Atlantic Regional Environmental Emergency Co-ordinator. The panel probably raised more questions than it answered, which was fair enough given the freewheeling nature of the discussion, the wide range of interests that coastal policies must accommodate, and the different areas of expertise of the panelists themselves. Peter Wainwright pointed out some of the bureaucratic complexities and jurisdictional conflicts associated with the management of our coastlines. He emphasized that before any integrated and practical Fisheries manage-





ment policy could be implemented, there must be a more clearly defined delegation of responsibility between different levels of government and a crisp dovetailing of all the various interests involved in the Fishery.

A socio-economic point of view was provided by Ms. Jansen, who talked about the historical aspect of the Fishery and noted that it was the main component around which the society and economy of the Maritimes had evolved. The inshore fishery, the social axis of which is the small coastal fishing community, comprises much more than just a set of statistics and market projections, she said. It involves a way of life and a whole complex of traditions that a great many maritimers would NOT like to see go down the tube.

Fred Windsor was critical of fisheries management in general and of Governments' role in developing ocean resources. He pointed out that in terms of capital expenditures, the Fishery has never really received a high priority from Federal officials. For instance, the money already spent on the Heavy Water Plant at Glace Bay would be sufficient to buy out the entire east coast fishing industry, fish plants and all, and guarantee export markets for years to come. He mentioned the fragmentation and diversity of the fishing community as one of the chief obstacles to organization.

Perhaps the most difficult task fell to Dr. Duerdin, who was faced with questions relating to environmental protection, oil spills and such like. He gave some idea of the difficulties involved in regulating and enforcing environmental protection of coastal areas and the dangers of pollution, not just by oil spills, but by other deleterious substances as well.

It was generally agreed that intelligent and informed policy decisions were the key to the future wellbeing of the Fisheries. It was also brought out that there was considerable evidence to support the contention that small or medium sized boats and individual ownership was still the most efficient way for the Fisheries to go.

**BRIEF TO THE MARITIME PREMIERS  
JUNE 4, 1979  
SUBMITTED ON BEHALF OF GROUPS  
AND INDIVIDUALS ASSOCIATED WITH  
THE NOVA SCOTIA, NEW BRUNSWICK,  
AND PRINCE EDWARD ISLAND  
BRANCHES OF THE MARITIME  
ENERGY COALITION.**

Representatives of groups specifically concerned about nuclear power, environmental organizations, and other voluntary associations interested in the nuclear issue, met May 12, 1979 in Truro, Nova Scotia and the following day in Sussex, New Brunswick. A number of these organizations have been in existence for at least five years. Other groups, whose members individually had been concerned about nuclear energy for some time, coalesced into three formal organiza-

tions after the recent accident at the Three Mile Island nuclear reactor in Pennsylvania. All of the groups' representatives at the two meetings mentioned above endorsed the following four points:

**1. WE ARE CONCERNED ABOUT THE HAZARDS OF NUCLEAR ENERGY AND OPPOSE ITS USE AND FURTHER DEVELOPMENT.**

For many people, both inside and outside the scientific and technical communities, this position represents an intuitive and ethical weighing of the risks and benefits of nuclear power, and their judgment is strongly against its use. For many others among the general public, there is pervasive disquiet and uncertainty, if not organized concern, about the wisdom of pursuing an energy strategy dependent on nuclear reactors.

We feel it is worthwhile to recall that in a democracy, ultimate political importance must be assigned to the values held by its citizens. This, the moral objections to nuclear energy and the public's reluctance to bear its risks, should be considered both valid in themselves and fundamental to further discussion.



However, for many of us, objection to the nuclear option represents not only a moral conclusion but also—or in some cases, instead—a conclusion reached after extensive technical research into nuclear energy and its alternatives. Apart altogether from the ethical aspect of the issue, nuclear energy to us does not appear to be a good option. There is not space to detail our perspective on all the technical issues here, but to cite only one illustrative case, the biological effects of low levels of ionizing radiation, in the light of recent studies, appear to have been heavily underestimated. And these technical problems have economic consequences: whether it is possible **economically** to operate a nuclear power program within what is currently felt to be prudent limits of radiation exposure is a much more pressing question than whether it is **technically** possible to design safe containment systems. Many of us believe that it is poor judgment in the extreme to place our reliance on an energy system in which worker and public safety must be weighed against economic considerations all along the line, from the amount of dollars spent on necessary regulatory agencies, monitoring and health and safety inspectors to the costs of slowing down licensing of plants for thorough safety reviews to the price of replacement power in taking a huge reactor off line to look for a suspected construction flaw.

**2. WE SUPPORT THE DEVELOPMENT OF NON-NUCLEAR ENERGY POLICIES AND PARTICULARLY ENERGY CONSERVATION AND THE DEVELOPMENT OF RENEWABLE ALTERNATIVE SOURCES.**

We believe that there are realistic alternatives to the Canadian nuclear program, ones which take into account general social goals such as economic growth, jobs, and environmental protection. We would call to your attention one such major study done for the Economic Council of Canada by Dr. David Brooks, entitled **Discussion Paper No. 126, Economic Impact of Low Energy Growth in Canada: An Initial Analysis**. It should be noted that the issues surrounding nuclear energy take on another appearance altogether if fission power really is only one option among others, and not the only feasible alternative.

**3. WE SUPPORT AN 18-MONTH MORATORIUM ON THE FORMATION OF A MARITIME ENERGY CORPORATION DURING WHICH TIME PUBLIC INPUT AND ASSESSMENT OF ISSUES SUCH AS REGULATION, ACCOUNTABILITY, THE DIRECTION AND THE ADVISIBILITY OF SUCH AN AGENCY WILL TAKE PLACE.**

In order to prevent distortion of energy policies in the direction of large scale electrical generation projects, and to ensure consideration of all significant aspects of the Maritime Energy Corporation, we feel it is absolutely vital to broaden public participation in debating and deciding the Maritime Energy Corporation's role, structure and policy direction.

**4. WE REQUEST A FULL ENQUIRY INTO THE POINT LEPREAU GENERATING STATION REGARDLESS OF WHETHER OR NOT A FEDERAL ENQUIRY INTO THE NUCLEAR OPTION TAKES PLACE. THE LEPREAU ENQUIRY WOULD EXAMINE SUCH ISSUES AS COST OVERRUNS, REACTOR SAFETY DESIGN, SEISMIC HAZARDS, AND CONSTRUCTION QUALITY CONTROL.**

Our concern about Point Lepreau generating station is more specific than our general critique of the nuclear option. Alleged construction problems at the site, massive cost overruns, construction flaws like the problems with the Babcock and Wilcox steam system, the downturn in demand growth, the resignation of the chief seismic engineer, the release of restricted AECB reactor safety documents which could have implications for Point Lepreau's design, and the total inadequacy of the original environmental impact statement together make Lepreau a special case deserving a special enquiry. We urge the Province of New Brunswick to hold such an enquiry regardless of the future ownership of Point Lepreau, and we urge the provinces of Nova Scotia and Prince Edward Island to make a full judicial enquiry into Point Lepreau one condition for all future, interprovincial energy agreements, including the formation of the Maritime Energy Corporation.



## BRIEF TO HALIFAX CITY COUNCIL CONCERNING THE PROPOSED 1979 TREE SPRAYING PROGRAM

by Susan Mayo  
June 8, 1979

Ecology Action Centre would like to present a perspective on the use of toxic chemicals in the environment and, in particular, the proposed Halifax City Tree Spraying Program.

We begin our remarks by quoting from **Ecoscience: Population, Resources, Environment** by Paul R. Ehrlich, Anne H. Ehrlich and John P. Holdren (Freeman & Co., San Francisco, 1970):

*There are three main reasons why the broadcast use of synthetic poisons is a generally undesirable way of controlling the sizes of pest populations. The first is that it exposes human beings to compounds that often have high acute toxicity and to others that may have long-term effects on health, including the induction of cancers. The second is that, by affecting nontarget organisms, synthetic poisons may disrupt the crucial service functions of ecosystems upon which human beings depend. One of those functions is, ironically, the control of some 98 or 99 percent of the potential pests. When that function is disrupted by the use of pesticides, the result . . . is the promotion of organisms that have been released from natural controls to pest status.*

*The third reason the broadcast use of synthetic poisons is undesirable is that such use encourages the development in pests of resistance to the pesticides. This problem is so serious that it has been described as a "primary obstacle to successful pest control today". Some major insect pests are now resistant to nearly all the insecticides registered by the U.S. government for their control.*

*These failings mean that not only does broadcast spraying represent both direct and indirect hazards to human beings, but that very often the spraying does not control the pest—and even exacerbates pest problems. Nevertheless, we could gain the impression from pesticide industry propaganda that only current patterns of chemical control stand between us and death from insect-borne disease or starvation. Nothing could be further from the truth. There are, in many cases, alternatives to broadcast use of pesticides that are more effective in controlling pests and that pose little or no threat to people or ecosystems.* [pages 647-648]

These highly respected authors clearly point out that the simplistic strategy of chemical control cannot possibly contain the versatile, prolific and adaptable insects.

Ecology Action Centre calls upon the City of Halifax not to use chemical control of its tree pests in 1979 during which time the City will develop a comprehensive Urban Tree Management Program. This program would involve, among other things, a monitoring program which addresses the health of the trees and not just the number of insects on them.

It should be pointed out that the Centre

together with the Halifax Field Naturalists, the Nova Scotia Bird Society, and the Nova Scotia Resources Council in June, 1977, requested that the City conduct a detailed examination of both pest and natural predator levels in the City of Halifax (see **Jusun**, Vol. 5, No. 5). Has such a study been completed? We see this piece of information as one part of a Tree Management Program such as we are calling for today.

Robert Van Der Bosch best outlines the type of management scheme we would like to see for our city in his book **The Pesticide Conspiracy** (Doubleday & Company Inc., Garden City, New York, 1978). He uses the term "integrated control". And I quote: "Integrated control is simply rational pest control: the fitting together of information, decision-making criteria, methods, and materials with naturally occurring pest mortality into effective and redeeming pest-management systems." (pages 151-152)

The late author made reference in his book to a program in Berkeley, California, which addressed the pest management problem from a non-spray strategy. Trees were inspected to determine whether there was a pest problem at all. Frequently the trees were just old and "tired", or suffering from poor moisture conditions, soil compaction, or malnutrition. And even where insects were found, their damage was often inconsequential or at most secondary to other misfortunes the trees were suffering.

*A major source of citizen complaints in Berkeley is the mess created by the honeydew excreted by aphids, particularly species feeding on linden, elm, and oak trees. The linden and elm aphid problems were largely solved by biological control effected by parasitic wasps imported from Europe. Imported parasites also helped with oak aphids, and when and where they didn't do the job, plain-water and water-and-soap solution sprays were substituted for the organophosphate insecticide previously used. . . . The Berkeley integrated-control program, which involves about thirty thousand trees on one hundred twenty acres, has been an outstanding success and a model of its kind. It has had spectacular effects, including the virtual elimination of synthetic organic insecticide use and a saving of about twenty-two thousand a year to Berkeley's Park and Recreation Department. In a recent public statement, Mr. Crayson Mosher, retired Berkeley city parks supervisor, remarked that his association with the integrated-control program was the most rewarding experience of his entire professional career. Currently, similar programs are under development in the cities of San Jose, Palo Alto, Modesto, and Davis.*

[pages 158-159]

Despite the fact that there are differences in climate and ecosystem between California and Nova Scotia, thus making the Berkeley program not directly applicable, we should nevertheless heed its general approach and some of its solutions.

The Parks and Grounds staff of the City of Halifax should be commended for *their choice* of the selective microbial insecticide **Bacillus thuringiensis** (B.F.) as a substitute

for the broadly toxic chemical insecticides used over the past thirty years. We assume B.T., commonly called Dipel, will be used to control tent caterpillars and cankerworms. We would question the use of B.T. to keep these pests in check. Tent caterpillars have a seven year cycle of increasing numbers in their population followed by a natural decline. Their parasites and predators are dyptera (flies) and wasps. While the messy and unaesthetic webs and cocoons left by these caterpillars is not to be discounted, we would suggest that City of Halifax follow the example of Sault Ste. Marie and just let the pest go its full natural cycle.

Rachel Carson, in her book **Silent Spring** (1972), noted that chickadees and other winter-resident birds can protect trees against cankerworms. With all the pollution and noise and chemical spraying, it would seem the city is not a place for birds (I haven't seen a robin in downtown Halifax yet this year). The city should encourage these types of insect-eating birds by allowing sufficient bush, trees, and open space for them to reside.

Diatomaceous earth and tangleweed are two other ways of controlling cankerworm. Tangleweed is a sticky substance that is applied around the trees in the fall and works well because the females must crawl up the trees to lay their eggs.

Aphids, as discussed above by Van Den Bosch, excrete a messy substance called honeydew. Ladybird beetles eat aphids and there presently is a company—Fossil Flower—Natural Bug Controls (463 Woodbine Avenue, Toronto, Ontario M4E 2H5) which sells these beetles by the pound. If our city is not too polluted for the ladybird beetles to survive, we may be able to control the aphid problem in this way.

It is our understanding that contact chemicals are very tricky to use against leaf minors. Leaf minors, as the Halifax City staff report of May 28, 1979 says, tunnel into the leaves and are more or less impervious to control application. Ecology Action Centre is concerned about worker safety when spraying with malathion. Robert Van Den Bosch, in his book **The Pesticide Conspiracy**, makes reference to the 1976 example in Pakistan where twenty-nine hundred persons spraying the supposedly safe malathion, were poisoned by this insecticide, and five died (page 31). We suggest the use of Cygon, a systemic substance which, when painted around the outside bark, leeches into the tree and attacks the leaf minor. Whether the Cygon method is cost effective is something to be determined. The basic difference would be capital outlay for paint brushes as opposed to a mist blower.

The leaf minor is presently the major pest on elm trees (and possibly weakening the healthiness of these trees). However, looking further ahead in time, Dutch Elm disease may be brought into the city by the bark beetle which is the disease carrier. It is our assumption that methoxychlor is being used by the city to keep the bark beetle population down.

Ecology Action Centre feels that the city should formulate a preventative Dutch Elm Disease Program as part of its overall Tree



Management Program. Perhaps we should heed the experience of other cities and begin to phase out elm trees by cutting older, weaker ones and keeping the healthier, younger trees. Halifax could profit financially from cutting these weaker trees now and selling them as firewood sawlogs to its residents or, as was the case in Montreal, to local furniture companies in sixteen foot lengths. Moreover, removing the dead and dying trees now will remove breeding shelter for the disease-carrying beetle. When and if Dutch Elm disease comes into the city (currently in Windsor, Nova Scotia), we will be required by law to cut and immediately burn the diseased trees.

As part of the elm tree phase out program, the city should begin to plant different species of trees of a similar shape such as Silver Maple, Norway Maple, Basswood and types of Hawthorn.

In a recent phone conversation, Dr. Eutobichon of the Pharmacology Department at McGill noted that bark beetles are more effectively managed when Sevin is applied in liquid form around the tree stem than when it is applied through a mist blower. This avoids the whole problem of spray drift and unnecessary human contact.

In conclusion, Ecology Action Centre would like to offer its assistance in researching and developing a comprehensive Urban Tree Management Program for the City of Halifax which does not rely on the use of toxic pesticides. Our library and professional contacts in this area are quite extensive and we would be willing to meet with city staff on this matter.

**BRIEF  
SUBMITTED TO THE  
CANADIAN TRANSPORT COMMISSION**

**JUNE 28, 1979**

Ecology Action Centre is a citizens' environmental organization with a history of involvement in a wide range of issues related to the quality of life and the environment in Nova Scotia. Transportation is one of these issues. We feel that the continuance and improvement of existing rail passenger services is essential (1) in order to keep open an important option for improving transportation efficiency and (2) to reduce dependence on the more environmentally problematic automobile. We are, therefore, opposed to the application to discontinue the D.A.R./Via Rail passenger service between Halifax-Kentville-Yarmouth. We would strongly urge that every effort be made not only to continue the service, but also to improve scheduling and upgrade facilities so as to encourage greater public use of D.A.R. rail.

Our concern stems mainly from two aspects of rail service that make it especially appropriate from an environmental point of view.

(1) Its energy efficiency as compared to other modes of transportation.

(2) The fact that trains are low-polluters. These points have no doubt been made in previous hearings and elsewhere; however, we feel that their continuing importance warrants reiteration here.

At the Eastern Transcontinental Passenger-Train Hearings held in 1978, data was presented which indicated that a Light-Rapid train would consume approximately 500 BTUs per passenger mile, as opposed to 600 for a bus, 900 for a conventional train, 1700 for an automobile, and 3900 for an airliner. While there may be little to choose between the Light-Rapid train and the bus, it seems clear that even allowing for statistical inaccuracies the train represents high energy savings when compared with other modes of transportation. In the context of current energy concerns, we feel this advantage cannot be emphasized too strongly.

The unprecedented rate at which our non-renewable resources are now being depleted makes it imperative that extravagant energy options be curtailed. Canada is now a net importer of oil. Our petroleum resources are clearly limited and it cannot be denied that we are becoming increasingly dependent upon the foreign policies of oil-exporting countries. In view of the gasoline supply situation that our neighbours to the south are presently faced with, the prospect of the rationing of fossil fuel supplies can no longer be dismissed as a remote future possibility, but must be considered as a very likely eventuality in the near future. Should it become a reality, we feel that passenger services, such as the D.A.R. provides, will assume an infinitely greater significance. The global priority accorded energy conservation at present should be more than sufficient, in our opinion, to warrant a high priority for any mode of transportation that contributes to conservation.

With respect to pollution, we feel that any form of transport that is instrumental in keeping emission levels to a minimum should be used to its fullest potential. The Ministry of Transport's Interim Report for 1975 indicates that the train is approximately 120 times cleaner than the auto, and three times cleaner than the bus in terms of carbon dioxide emissions. A Nationwide Inventory of Air Pollutant Emissions prepared for the Department of the Environment in 1976 states that railroads are responsible for only 0.2% of total carbon dioxide emissions, as opposed to 60.1% for motor vehicles. Should the railway's potential for electrification be realized at some future time, rail service will provide even cleaner transport. Moreover, additional economies would be realized with respect to energy consumption. It is our opinion that rail technology has a substantial contribution to make towards a cleaner environment.

In addition, we would like to mention briefly several other positive environmental aspects of rail travel. Railroads are generally acknowledged to be far and away the safest way to travel, not to mention the most comfortable. For many people, these are significant factors insofar as a better quality of life is concerned. Moreover, it is our understanding that it costs somewhere in the neighbourhood of one million dollars per year to operate the D.A.R. service, whereas it has been estimated that it will cost over two million dollars to build one mile of Highway 101. The latter, we feel, can have nothing but an adverse effect on the environment. More prime agricultural land will be taken out of

production, more energy will be consumed, and more highway fatalities will inevitably occur.

In conclusion, may we re-emphasize that environmental considerations should provide a major incentive for the continued operation of the D.A.R. trains.

**ECOLOGY ACTION CENTRE SUPPORTS  
ELECTRICITY RATE REDESIGN,  
NO SUBSIDIES**

**June 22, 1979**

Ecology Action Centre today commended the provincial government's decision not to increase electricity rate subsidies further at this time.

However, at the last three Public Utilities Board electricity rate hearings, the Centre strongly recommended a new type of rate structure which would provide benefits to industries or consumers willing to use off peak electricity.

Susan Holtz, Ecology Action Centre's energy coordinator, commented, "Nobody likes having to pay more for electricity. But it's an inherently expensive form of energy and throughout North America its costs have been rising steadily in the past five years. It's politically irresponsible, even though it may win votes, to give people the idea that in some way government can prevent electricity costs from going up."

Ms. Holtz said that politicians would be providing better leadership if the high real costs of all forms of energy were acknowledged by all of the political party leaders. "Electricity rates must stop being used as a political football," she said.

Increasing food prices, housing, and the price of gasoline and heating oil, as well as electricity rates, all have a serious impact on low income consumers. "We'd do better to concentrate on reducing income disparity, perhaps through a guaranteed annual income, than to try to subsidize electricity," Ms. Holtz continued.

The problem with subsidies is that the price of different energy sources is the main factor in their development and use. If electricity is subsidized, it will delay the adoption of conservation measures and renewable alternate energy sources. A recent study in the U.S., for example, indicates that solar hot water heating is economically competitive where other energy sources are not subsidized through pricing policies. (*Science*, 23 March 1979)

Over the long run, failure to adapt to the changing energy situation will hurt Nova Scotia industry and consumers alike. But subsidies will only encourage trying to cling to the status quo.

Ms. Holtz also criticized the present electricity subsidies for being too high. The cut-off point of 700 kwh a month is above even the average consumption rate. "There are many other innovative things that could be done to help electricity consumers, ranging from using a time- or season-differentiated rate structure all the way to having the utility finance consumers' alternate energy technology, as is being done by the Tennessee Valley Authority, for instance," Ms. Holtz concluded.





## SLUDGE: A REDISCOVERED RESOURCE

Ginny Point  
May 27, 1979

Modern society has only just begun to recognize the vast potential inherent in one of our greatest "waste" products: sewage sludge. When properly managed, sewage can provide a safe, economical means of returning valuable nutrients to the soil, rather than inappropriately dumping them in our waterways or landfill sites. For example, sewage waste can be converted into nutrient rich fertilizer for city gardens and agricultural croplands. It can also serve as enriched topsoil in the reclamation of strip mined areas, or in the reforestation of woodlots damaged by clearcutting. Finally, Methane gas, a by-product of some treatment plants, can substitute for a high energy fuel. Sewage recycling may not be as glamorous a topic as solar energy. However, it provides a very important means of cleaning up our polluted waterways, and most efficiently utilizing our natural resources.

### WASTE DISPOSAL IN "THE GOOD OLD DAYS"

Up until the turn of the century, farming with human waste was a standard practice throughout the world. Community residents deposited their "night soil" in nearby cesspools; local farmers then competed for the privilege of "disposing" of the "waste" upon their agricultural lands. Some municipalities actively initiated their own recycling programmes for the benefit of the urban dwellers as well as the local farmers. As early as 1839, human waste from New York, Baltimore, Cleveland, and Washington D.C. was collected, composted and marketed under the trade name of "Poudrette" fertilizer.(1)

Unfortunately, many cesspools were unsanitary due to the lack of proper management, and caused the unnecessary spread of infectious diseases. When it became technically possible to install water services to urban residents, many communities eventually converted to the "new" system of flush toilets; hence the birth of the waterborne disposal method.

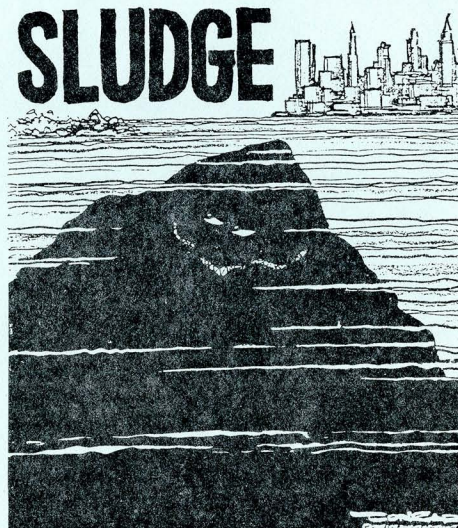
### SLUDGE REEXAMINED

We now recognize that this "new" system is far from ideal. Not only does it substantially aggravate problems of water quality, it also serves to deprive the soil of valuable nutrients such as nitrogen, phosphorous, and potassium. To counter the serious pollution problems caused by the waterborne disposal method, the United States Congress passed legislation entitled the **1977 Clean Water Act**. This Act specifically prohibits ocean dumping of sludge by 1981. In Canada, the provincial Departments of Environment are also

beginning to restrict current practices of sewage waste disposal in fresh water lakes and rivers. As a result, many communities have begun to reexamine sludge recycling as a viable method of waste management.

Municipal composting facilities are now underway in Pictou County, Nova Scotia, a rural municipality; in Durham, New Hampshire, a small university town; in Bangor, Maine, a medium sized commercial town; and in Chicago, Illinois, a very large sprawling metropolis, to name a few. In all these cases, the final fertilizer product is either utilized by the municipality or given away free of charge to area residents.

There are also numerous examples of composting projects operated by private enterprise. For example, the Kellogg Supply Company in Carson, California, is paid by the County of Los Angeles to "dispose" of the sludge from their treatment plant. They compost and market it under the trade name of "Nitrohumus". Similarly, Clearview Farms Inc. of Omaha, Nebraska has developed a successful compost product entitled, "Down to Earth—True Organic". One essential ingredient is the sludge from Omaha's sewage plant.



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### HOW DOES IT WORK?

These composting operations follow a relatively simple biological formula. The sludge is removed from the sewage treatment plant or from the individual on-site septic tank, and mixed with a bulking agent such as wood chips or seaweek at a ratio of one part sludge and two parts bulking agent. This mixture is then deposited either in long rows, or it is laid on top of heavy-duty perforated coils in large static piles. The rows are frequently "turned" by large composting machines, while the static pile is mechanically aerated through the large coil from below. The objective of both methods is to continually aerate the composting sludge. During the twenty-one day compost process, the oxygen breathing bacteria within the sludge actually digest the sludge, and convert it to a nutrient rich humus. Harmful pathogens do not survive the high temperatures (160F) which are generated by the

bacteria during the composting process. Thus, the final product is a safe, nutrient rich organic fertilizer or potting soil. However, it is not recommended that sludge containing significant amounts of industrial waste be used on food producing soil. One must not overlook the potential danger for crop contamination via toxic amounts of lead, mercury, cadmium, pesticides and other poisons.

### IS IT ECONOMICAL?

If properly marketed, sewage compost can be cost effective as well as environmentally appropriate. The Milwaukee Sewerage Commission has successfully marketed its sewage compost, "Milorganite" for over forty years. As mentioned above, The Kellogg Supply Company and Clearview Farms Inc. are both well established, financially viable businesses.

Other communities such as Pictou County and those listed above, have chosen to reserve their composted sewage for municipal public works projects. This too can be cost effective. Moreover, as landfill sites become increasingly costly and socially undesirable, and as the cost of purchasing petroleum based chemical fertilizers continues to escalate, composting will actually cost less than landfilling. Ocean dumping still remains the least costly alternative. However, we can no longer consider this method as an acceptable waste management practice due to its damaging environmental consequences.

### ALTERNATIVE METHODS OF SLUDGE RECYCLING

Land applications of non-composted sludge offers another successful means to recycle our waste. After secondary treatment at a treatment facility, the stabilized sludge can be sprayed, spread, or injected directly into the soil. Thus the sludge is composted on-site rather than at the treatment facility. Prior to land application, most of the pathogens and the unpleasant odours are removed from the sludge via the secondary treatment process at the plant.

For example, non-composted sludge can be a very effective ingredient in the reclamation of strip mine sites. The Pennsylvania based Institute for Research on Land and Water Resources applied a one inch layer of sludge on top of two and a half tons per acre of lime on a newly backfilled strip mine site in Pennsylvania. Four months after plowing and planting, the site fully regenerated into a grassy meadow. The Institute reports similar success with land reclamation of an abandoned anthracite mine site and an additional strip mine site.





## OTHER BENEFITS

The preceding examples have all concentrated on the benefits of recycling **sludge**, either by composting or direct land application. However, other by-products of sewage treatment plants or on-site septic systems, such as methane gas, can also be reused very effectively. Methane gas is produced during the decomposition process by anaerobic (non-oxygen breathing) bacteria. When purified, it can be substituted for natural gas. Official estimates indicate that one pound of sewage waste can generate approximately 1.8 cubic feet of methane gas. At present, many sewage treatment plants recover their methane gas, and burn it to fuel the digesters. Alternatively, the gas can be used to heat the air which aerates the static pile compost system.

## THE FINAL ANALYSIS

In conclusion, we now recognize that sewage sludge need **not** be a dangerous, noxious, evil which warrants permanent disposal far from the public eye. Rather, it can be a valuable resource which offers exciting opportunities in the field of organic fertilizers, and high energy gas. Unlike fossil fuels, it is a renewable resource, and is available in all areas of human settlement. It is easily "mined" from municipal sewage treatment plants, as well as individual on-site septic systems. Sewage recycling requires a relatively simple technology, and is based on well understood biological principles. When properly managed, sewage recycling is safe, economical, energy efficient, and environmentally appropriate. The Ecology Action Centre urges more communities in Nova Scotia to follow the example set by the Pictou County District Planning Commission, and others listed above.

For more information, or resource material re sludge recycling, phone

For more information, or resource material re sludge recycling, please contact us at the EAC

## BOOK REVIEW

BY DAVID McLAUGHLIN

### THE NUCLEAR STATE

(by Robert Jungk, translated by Eric Mosbacher, published by John Calder Pub., London, 1979.)

An acquaintance of mine who works in the Federal Energy Regulatory Commission in Washington, D.C. said the thesis of this book is something he really hadn't considered before. He said it really shook him up. The publishers believe it may be the most important book they have ever brought to public attention.

Robert Jungk, one of the world's best known scientific journalists, shows how the proliferators and the technical elite of government and industry have been working together to create the fundamental beginnings of the nuclear state. Their co-operation in attempting to persuade the world of the safety of this awesomely dangerous industry has resulted in a drastically uninformed and vulnerable public. He documents the experiences of the atomic workers, the intimidated and the supervised whose voices have been muffled and who have been forced to accept extraordinary dangers in the places they work. Having established this notion of government and industry working to create an illusion around the domestic nuclear industry, he goes on to a startling thought.

The possibility of nuclear terrorism and reactor sabotage increases with the increase in the number of nuclear facilities. Leave aside

for the moment the considerations of unintended nuclear catastrophe, the kind of thing Three Mile Island made you worry about. What Jungk is talking about is intentional diversion and use of reactor fuel. This danger has been about as underrated as reactor safety on a technical level. Protecting the society against the diversion and use of nuclear fuel in crude but effective weapons presents the ultimate security challenge. A suitably thorough response to this security challenge is a threat to the basic freedoms of speech and dissent that we accept as the foundation of democracy. That's the stunner. Protecting the nuclear industry will be very necessary, and it will change the relationship between the government and the governed.

I had just finished reading the book when I heard an interview on **As It Happens**, C.B.C. radio. Barbara Frumm was talking to Richard Hellman, a nuclear expert and professor of economics at the University of Rhode Island. He was talking about the people who had made the decisions on the nuclear bombs and he continued ". . . these same people, with the same standards of military risk taking, made the decisions, as far as I can tell, to go ahead on civilian reactors with roughly the same sort of risk scaling that would apply to the military sector. And I think that's where the big mistake was made."

The inflated projections of energy needs made in the booming fifties and sixties have convinced some people that we need to accept the changes required in the nuclear state. But the centralization of economics around atomic power sources creates a vulnerable and ultimately security conscious society. A military society.

And that's a big mistake.

(In Halifax, **The Nuclear State** is available from Red Herring Book Co-op, 1652 Barrington Street, telephone 422-5087. \$9.95)



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