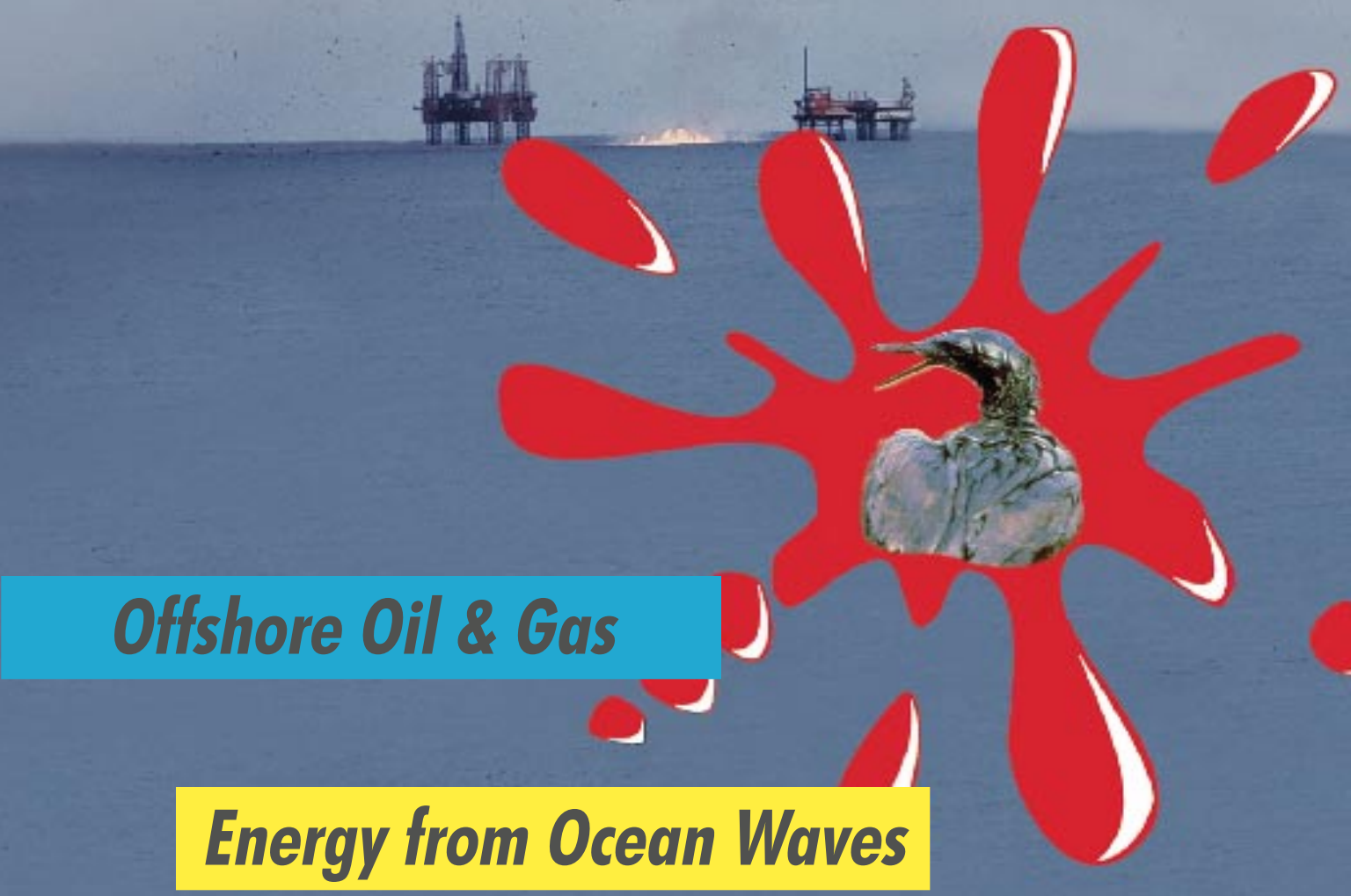
Watershed Sentinel

March/April
2004
Newstand Price $3.50

Environmental News from BC and the World



Offshore Oil & Gas

Energy from Ocean Waves

☑ Saving Paper

Vol 14 No 2 ISSN 1188-360X

Watershed
Sentinel

Publisher and Editor Delores Broten
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Web site Yendor
Cover and Graphic Design Ester Strijbos
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Special Thanks to Horizon Publications, Hugh McNab, Guy Dauncey, Maggie Paquet, Joan Sell, Norberto Rodriguez dela Vega, Francis Toms, Gloria Jorg, Susan Yates, Peter Ronald, Kathy Smail, the writers, advertisers, distributors, and all who send information, photos and ideas. This magazine would not happen without you.

Print Run 7,500 Circulation est. 12,000
Published six times per year
Subscriptions $20 one year,
$30 two years Canada, $26 US one year

Distribution by news stand sale through Disticor (Toronto), by subscription, and to members of Friends of Cortes Island and *Reach for Unbleached!* Free at Vancouver Island and Vancouver area libraries and community centres, in BC colleges and universities, and to environmental groups.

Member British Columbia Association of Magazine Publishers

ISSN 1188-360X

We acknowledge the support of the government of Canada through the Canada Magazine Fund

Publication Mail Canada Post Agreement PM 40012720

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FROM THE EDITOR

Get with the Programme

We know what has to be done to move the human enterprise into sustainable survival mode. Between us all, we have all the pieces of the programme. Donella Meadows *(Beyond the Limits*) and dozens of other thinkers have added to the checklist.

We need to turn the Earth Charter's dream (WS, February/March 2002), a sustainable global society, into reality by acting justly toward all humans and species. We will need to take food, water, shelter, health care and education out of the market system so that we are not buying and selling our fellow beings.

We need to make democracy work so that everyone has a stake in the tough decisions to come. BC's Citizens' Assembly to evaluate proportional representation is on the cutting edge of experiments in how to do that.

We need to curb the power of the corporations, disband the bad actors, so that the democracy can work and so that the people can choose to get on with the major system re-designs we need to do.

There is an awful lot of work to do.

Move into renewable non-polluting energy on a wartime basis and simultaneously start to prepare cities and agriculture for the worst of the climate change which is already wreaking havoc around the world.

Shift world food production into organic mode, so that we can afford to use little amounts of pesticides in emergencies.

Move industry onto the fast track for clean production and re-design of products so that the modular parts are re-placeable and re-useable.

Re-design and re-build our cities and industries so that people do not need automobiles for every facet of their lives, and along with that, engineer and build decent and safe public transportation.

Now Duncan Brown, an Australian ecologist, in *Feed or Feedback: Agriculture, Population Dynamics and the State of the Planet,* (International Books 2003, ISBN 90 5727 048 X) informs us that the mega city fed by modern agribusiness will inevitably crash, within the next 150-200 years. Why? Because urban sewage cannot be returned to the fields from which the nutrients came, both because of contamination and the great distances. Modern sewers dump phosphorus, an essential plant nutrient, into the sea, from which it is not recoverable. The mines will eventually be exhausted. Humans, says Brown, need to lower our population radically and move back to small towns dispersed between the fields which provide their food, so a steady nutrient cycle can be developed.

Yes, there's a lot of work to do, but there is no excuse for not knowing the programme.

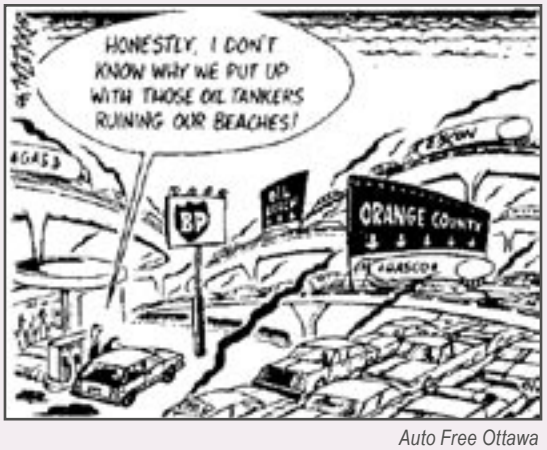
Delores Broten, Whaletown BC, March 2004

Watershed SENTINEL

Printed on 100% post-consumer recycled process chlorine-free newsprint, with vegetable inks

No matter where on Earth we live, we are all residents of a watershed. Throughout history, clans, tribes and all organized groups have endeavoured to protect their home watershed or territory. Sentinels were stationed throughout the highlands of a watershed to herald the coming of friends, or of threats in the form of encroachment, floods, fire or hostile armies.

Threats to our watersheds exist to this day, whether they come from careless individuals or insensitive corporations. The *Watershed Sentinel* keeps watch and informs.



Auto Free Ottawa

When the Party's Over

"At some point the ideological demonizing of scientists who tell us the painful truths that we don't want to hear, the ridiculing of environmentalists as duplicitous fools and the blaming of journalists for reporting what science is saying has got to be firmly set aside, just as we set aside the tantrums of a two-year-old who can't have the candy it wants."

—Stephen Hume, "It's Science not Conspiracy," Vancouver Sun, March 6 2004

Your subscription keeps us in print. Subscription Forms are on the back cover. Thank you!

Energy

Water

Food

Weather

News and Regular

Friends of Cortes Island will return next issue

Cover Photos:
Oil Rig Fire - *National Oceanic and Atmospheric Administration (NOAA) Photo Library*
Oiled Bird - *Photo courtesy of the Exxon Valdez Oil Spill Trustee Council.*

From Our Dear Readers

Clear Concise Information

Just a very quick note from one of your far-flung readers to say how much I appreciate the excellent job you and your colleagues do with the *Sentinel*. While I cannot say that I always 'enjoy' what you include, it is always clear, concise and well-documented and the information is reliable. Absolutely no reply needed - I just thought I would let you know about how one reader feels!

Michael Rooksby, Victoria

News: Crofton Coal

The NorskeCanada Crofton pulp mill has put its proposal to burn coal, shredded tires and creosoted railway ties on hold for six months of community "consultations," proposing a series of focus-group meetings, to be co-ordinated by a Vancouver public relations company. The canny response followed a successful citizens' meeting at Crofton in early January attended by about 500 people.

The Crofton Airshed Citizens Group (CACG) is seeking an independent baseline study of air and water quality, and their health impacts. The study is to include computer modelling of the airshed, soil testing of school playgrounds and agricultural lands, and leachate sampling of the mill's landfill sites. Group representatives met with Water Land and Air Protection Minister Bill Barisoff in February to express concern about the lack of regulation of the mill's air emissions and to request WLAP's support for an independent study.

Every inhabitant of a mill town in British Columbia would easily decode Barisoff's response as reported in the *Duncan Cowichan News Leader:* "You can't have emissions at levels where you drive the mill out of business."

CACG's investigations into the proposal raised questions about the Crofton Mill's current air emissions, concerns which were voiced by many local residents at the CACG-organized public meeting. Complaints include incidents of white ash and sticky black soot falling from the sky, stinging eyes and breathing difficulties, green or grey smoke emissions from the mill, and improper transport and disposal of contaminated ash.

■

For more information see: *http://www.croftonair.org* and *http://www.rfu.org* See also *"Crofton Gets Innovative with Coal, Tires and Waste Railway Ties," Millwatch in the Watershed Sentinel, November 2003.*

The Watershed Sentinel welcomes letters but reserves the right to edit for brevity, clarity, legality, and taste. Anonymous letters will not be published. Send your musings and your missives to: Watershed Sentinel, Box 39, Whaletown, BC V0P 1Z0 editor@*watershedsentinel.ca*

Tires - The Burning Issue

I would like to compliment you on your article on BC's scrap tire problems. It was very well done and very factual. As the largest tire recycler in BC, we are concerned with the burning issue. It seems that most policy decisions are made on "money" and not what is the right thing to do.

I started Western Rubber in 1989 and we have made business decisions based on the 5R's. We have built our business on what the government stated publicly and wrote into different policies. It would be shameful if this government destroys the best tire recycling program in North America just in order to try and balance a budget!

Good work! Thank you.

Mike Roberge, Western Rubber

We are Honoured, Thank You!

The enclosed cheque is from honoraria given to me for my duties on the Islands Trust Fund Board. The story is that I did not approve of board members getting honoraria for attending meetings, so over the past years I've donated my cheques to help pay down the mortgage on the acquisition of South Winchelsea Island. The last cheque goes to you because I believe the *Watershed Sentinel* is one of the wonderful things that glues our little isolated island communities together as we find out about common issues and help each other solve them.

Kathy Dunster, Bowen Island BC

Hope from Europe

Congratulations on the excellent article, "A BC Activiist Goes to Europe," *Watershed Sentinel*, January/February 2004. Having visited Denamrk, Germany and France a long time ago, I feel hope from your endeavours to join the Old Ways to our new ways.

Perhaps it is time that someone from Europe comes here to try and instill a meaningful overview of conservation by selective means such as that given to us by Merv Wilkinson, a very dear friend. With foresight and planning we can leave a peaceful future for our children's children.

Philip J Chambers, Lantzville BC

Biased Science Panel OKs Offshore

With dull predictability, the federal Royal Society Expert Panel on the science of whether or not to lift the moratorium on offshore oil and gas development on BC's west coast reported in February that there wasn't enough knowledge to assess the risks, but that shouldn't stop development. Here are some problems with that report.

by Stuart Hertzog©2004

1) **In reaching its conclusions, the Panel used the same illogic as Dr. David Strong used in the provincial Science Review,** that while many knowledge gaps exist they can only be filled by lifting the moratoria, as only then will industry pay for baseline research.

2) **Politicians and not industry are driving this process, and it's costing taxpayers millions of dollars already with more to come.** If industry really wanted to explore the area, energy corporations would be offering research money to get what they want. But because governments are needy, industry will come to the table only if they are promised billions of dollars in tax concessions and incentives, which they are already getting in other areas of the province. Politicians want to lift the moratoria so they can persuade industry to come in and explore, so they can look good for the next election - short-term thinking.

3) **The Terms of Reference for the process distorted the Precautionary Principle in favour of development,** by redefining it as "it's OK to use the precautionary principle as long as it doesn't stop us deciding to go ahead." This is NOT the Precautionary Principle, and the federal government should be ashamed of distorting this essential ecosystem management concept.

4) **The conclusions of the Science panel ignore the reality of global warming, and the consequence of burning more fossil fuel.** While federal and provincial governments continue to pour taxpayers' money into subsidizing fossil fuel explora-

Continued on Page 4

BAN RAW LOG EXPORTS — The Youbou Timberless Society, "BC Logs for BC Jobs," enjoys high popular support at a Duncan overpass, but the BC government's new forest tenures and log market will only accelerate log exports. Ken "Papa" James says that while we are trying to control the corporations, the federal "surplus" timber test needs to be applied to the prime logs coming off private lands so it's not as easy to ship them south. *—photo D. Broten*

Offshore Panel continued

tion and extraction, non-polluting 'alternative' energy technologies languish. This is far from a level playing field, and the conclusions of the Royal Society Science Review do nothing to help end our dependency on fossil fuels.

5) **The process used by the Panel was biased and dominated by pro-development bureaucrats and by industry.** The workshops were dominated by many long presentations from the energy industry, many of which had no science content, and by consultants to government and industry with a pro-development bias.

6) **The Panel consisted of people who derive part of their income from consulting to the energy industry.** As they spend their professional lives dreaming up ways of helping industry improve its efficiency and safety record, the Panel was not likely to report it was not OK to lift the moratoria. Even as academics, they stand to gain if industry and government pour research money into marine science on the west coast.

7) **The Royal Society Panel made a lot of assumptions which it cannot guarantee will be put in place.** The main assumption is that a "proper regulatory environment" will safeguard the environment, but in BC we can almost guarantee this will not happen due to the complete politicization of environmental protection. Both governments are in a conflict of interest over revenues.

8) **Another assumption is that relatively small safety zones can protect the marine and coastal environment.** On the contrary, the evidence is that a spill in one part of this inland seas system will affect the entire ecosystem directly or indirectly. "Postage-stamp" Marine Protected Areas are laughable in the face of a major oil spill or gas blowout.

9) **A further assumption is that safety measures work all the time - they don't, and often it's the small spills and mishaps that add up.** While the evidence points to an overall decline in major spills and tanker sinkings, they continue to happen. Small spills often are not reported by the authorities, but have a cumulative effect of slowly degrading the pristine coastal environment. No beach will be free of some oil if exploration was to take place in the Hecate.

10) **This is a critical ecosystem that is vital for the continued marine life on the entire west coast of North America.** To put it at risk simply so some politicians can cling to power or some energy industry academic consultants can make money from industry-funded research contracts, is to prostitute science on the altar of political and economic expediency.

■

Stuart Hertzog is an environmental researcher and writer based in Victoria. He is president of Sea Watch Ecological Society.

Federal Review of BC Offshore Oil & Gas Moratorium

The Public Review Panel will be visiting northern and coastal communities to hear the public's views on lifting the federal moratorium on oil and gas activity in the Queen Charlotte Area. Sessions are scheduled for the following locations, from Monday, April 5 to May 15, 2004:

Queen Charlotte City	Mon/Tue, 5/6 Apr
Masset	Wed, 7 Apr
Lax Kw'alaams,	not confirmed
Prince Rupert	Thu/Fri, 15/16 Apr
Kitkatla	not confirmed
Kitimat	Tue/Wed, 20/21 Apr
Bella Coola	Wed/Thu, 5/6 May
Alert Bay	Fri, 7 May
Port Hardy	Mon/Tue, 10/11 May
Vancouver	Tue/Wed/Thu, 11/12/13 May
Victoria	Thu/Fri/Sat, 13/14/15 May

Detailed information on how to participate, specific locations and submission deadlines is available on the website at *www.moratoriumpublicreview.ca* or by contacting the office. Participants are encouraged to pre-register for oral presentations of less than 15 minutes. A written submission will carry the same weight as an oral presentation.

The deadline for written submissions to be received at the Public Review Panel office in Vancouver is May 15, 2004.

For further information please contact:

Scott J. Gedak, Project Manager (*sgedak@nrcan.gc.ca*)

Public Review of the British Columbia Offshore Oil and Gas Moratorium

Suite 580, 800 Burrard Street, Vancouver, British Columbia V6Z 2V8

Phone 604-666-3744, Toll Free 1-866-386-1323, Fax 604-666-3755

The Royal Society of Canada's "Report of the Expert Panel on Science Issues Related to Oil and Gas Activities, Offshore British Columbia" is available at *www.rsc.ca <http://www.rsc.ca>* and in communities where Public Review sessions are being held.

Why Would They *Do* that?

Oil Public Meetings
Contracted without Tender to ProIndustry Groups

Sea Watch Ecological Society has asked the Auditor-General of BC to investigate two untendered communications contracts worth $262,000, awarded to two pro-industry groups without any formal process.

The Offshore Oil and Gas Team of the BC Ministry of Energy and Mines awarded two public information contracts to two energy industry lobby groups to hold five public information meetings on offshore energy issues in five coastal communities.

"Our understanding is that two contracts were awarded to the Pacific Offshore Energy Association and the Pacific Offshore Oil and Gas Association without public notice or any formal evaluation process," Sea Watch president Stuart Hertzog said. "If so, this contravenes the BC government's own procurement policy."

"We cannot understand why the Offshore Team would give pro-industry lobby groups money to do this. We are concerned that only a one-sided view will be offered," Hertzog concluded.

Sea Watch Press Release, February 2004

Alcan
versus Kitimat

With remarkable social unanimity, the town of Kitimat has gone to BC Supreme Court to try to get Alcan to stop selling power from the Kemano Power Project River and start making more aluminium.

Alcan can produce power from the Kemano project for under $5 a megawatt hour, and sells it for 10 times as much. Energy sales make more business sense than expanding or maintaining aluminium production but Alcan says no jobs have been lost due to its power sales.

Kitimat, founded as a company town for Alcan in the 1950s, says that the terms of the company's charter to divert the Nechako River to Kemano in 1949 was dependent on the use of the power to smelt aluminium. Kitimat wants the provincial government to enforce those terms.

Although the previous NDP government did stop further diversion of the Nechako River to Alcan's turbines, it did not stop Alcan from expanding its electricity sales.

Parksville Qualicum Beach News, January 2004

Solar Panels
for London

"Red Ken" Livingstone, the interesting mayor of London who introduced a toll for driving into downtown London, is calling for new homes to include photovoltaic solar panels which would feed back into the electric grid. The requirement is part of a set of strict building and planning rules for local authorities that will go into effect next month, despite the curious protests of the building industry who say that focussing on older buildings would be more efficient.

The Independent, January 2004

Sumas 2
NEB Takes It Down

The National Energy Board (NEB) has denied an application by Sumas Energy 2, Inc. (SE2) to run an international power line from Sumas, Washington to BC Hydro in Abbotsford, BC. The line would have permitted SE2 to transport electricity from a proposed Power Plant to be constructed in Sumas to BC Hydro's substation but the NEB concluded the line was not in the Canadian public interest, would provide no benefit but only burden to local or regional communities, and was not needed for Canada.

NEB Press Release, March 2004

LNG Terminal
Do You Copy, Ladysmith?

Citizens in Baja California are citing an explosion at an Algerian Liquid Natural Gas (LNG) terminal and a Mexican environmental assessment of a LNG terminal proposed for Baja as proof that LNG storage tanks are not benign. The Algerian blast, caused by a high-pressure boiler, killed 27 people and injured scores while starting a long-lived fire. The Mexican analysis says an accident at the proposed Baja LNG terminal fifty miles south of San Diego could cause second-degree burns to anyone within one mile.

Only four LNG receiving terminals are now operating in the United States, but LNG is the world's fastest-growing primary energy source, and thirty more are planned. LNG is mainly used to power electricity plants.

San Diego Union-Tribune, January 2004

Prince William Sound Still Bleeds

The ecosystem still shows negative responses to the 1989 Exxon Valdez oil spill

Almost fifteen years after the Exxon Valdez oil spill in Prince William Sound, the ecosystem is still suffering from the impacts, says a study published in *Science* in December. The authors, who examined a huge database of follow up studies, argue that "ecosystem-based toxicology" should replace current risk assessment for toxic substances. Among still-persistent ecosystem effects:

- Significant amounts of crude oil remain trapped in sediment on the sea bed, poisoning mussels, clams and other sediment-dwelling creatures.
- When ducks or larger animals like sea otters eat the shellfish, they suffer reproductive impacts and populations have not recovered.
- The death by oil of focus (rockweed) beds changed the structure of the foreshore ecosystem, leading to algae and barnacle growths. When the rockweed re-established, it was all of the same age, and when it died out, baring the rocks again, the cycle repeated itself.
- Sublethal toxic concentrations from the oil are still high enough to damage fish eggs. Studies from this spill first led researchers to realise how sensitive salmon are to some polyaromatic hydrocarbons (PAHs). Pink salmon died in oiled streams for up to 8 years after the spill.

Photo Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration

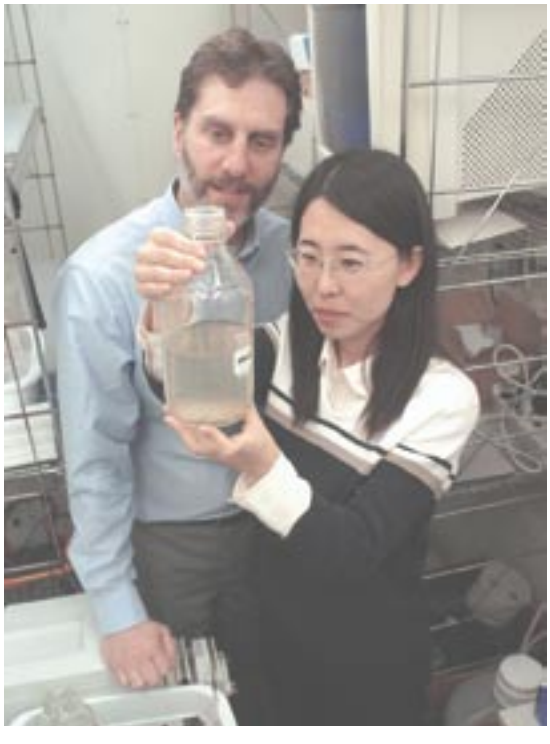
Running Fuel Cells With Microbes

Penn State environmental engineers have shown, for the first time, that a microbial fuel cell (MFC) can generate electricity directly from wastewater skimmed from the settling pond of a treatment plant. Other researchers have shown that MFCs can be used to produce electricity from water containing pure chemicals including glucose, acetate or lactate.

Microbial fuel cells work through the action of bacteria which can pass electrons to an anode, the negative electrode of a fuel cell. The electrons flow from the anode through a wire, producing a current, to a cathode, the positive electrode of a fuel cell, where they combine with hydrogen ions (protons) and oxygen to form water.

In MFCs currently under investigation in other laboratories, various kinds of bacteria are typically added to the system. However, in the Penn State approach, the naturally occurring bacteria in wastewater drive power production. In addition, a reaction (oxidation) that occurs in the interior of the bacterial cell lowers the biochemical oxygen demand, cleaning the water.

Penn State University Press Release, March 2004



Bruce E. Logan, professor of environmental engineering and director of the MFC project, and his lead researcher, Hong Liu, work in their controlled temperature lab.

21st Century Energy

Ocean Energy – it can be made by harvesting the energy in the tides, currents, or salinity or thermal differences can generate it. In February, Wave Power was the rage.

Wave Hub

England's South West Regional Development Agency has committed almost half a million pounds for a study toward building an electrical socket, known as the Wave Hub, off Cornwall's Atlantic coast. The Wave Hub will consist of an underwater cable connected to the national grid and extending approximately nine miles out to sea. Developers will be able to rent a hook up while they test their equipment, allowing them to recoup some investment from the immediate sale of their power, and encouraging regional development.

South West Regional Development Agency web site, March 2004

The Wave Dragon

In February ESB International, a Danish company, celebrated the installation of generators and inverters on its Wave Dragon in the northern Jutland Sea. One Wave Dragon is rated for 4 to 11 MW.

The Wave Dragon, first conceptualized in 1986, uses wave action to store water temporarily in a large reservoir, creating a head. This water is let out through several turbines, thus generating electricity. The company says the devices are more powerful and less finicky than other wave energy inventions.

http://www.wavedragon.net

Pelamis

In February, Ocean Power Delivery Ltd. completed the first full-scale Pelamis Wave Energy Converter, built in Scotland. Similar in size and rating to a modern wind turbine the Pelamis will be installed at the marine energy test centre in Orkney.

Jim Wallace, Deputy First Minister of Scotland, said: "Scotland has the full potential to create a marine energy supply chain, utilizing existing oil and gas industry expertise."

Ocean Power Delivery, February 2004

In March, Ocean Power Technologies signed a contract with Spanish electricity utility Iberdrola for a pilot project involving 10 power-generating buoys, producing 1.25 megawatts. The buoys will be placed about a half-mile off Spain's north coast. OPT has a similar pilot scheme running off Hawaii with the support of the US Navy.

Ocean Power has plans for 100 megawatt plants which they say will be able to produce at 3-to-4 cents per kilowatt hour, compared with 5-6 cents for wind.

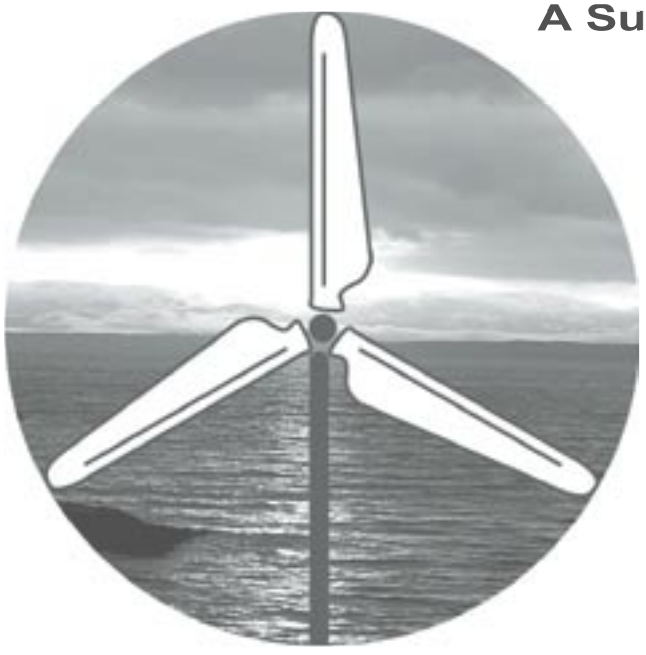
Planetark.com, March 2004

Waves over topping the Wave Dragon

Wind, Sun & Water

A Submission to BC Hydro's 2004 Integrated Energy Plan

by Guy Dauncey



BC faces three threats from our use of energy: global warming, and the peaking of oil supplies, and natural gas supplies. BC needs policies that will accelerate investment in sustainable energy technologies, and a road map that will ensure a smooth and just transition to a sustainable energy economy, without a net loss of jobs.

At the start of the 21st century, the people of BC — and the world — face an enormous, triple threat that stems directly from our use of energy.

The first threat comes from the growing concentration of greenhouse gases in the atmosphere, caused by our use of coal, oil and gas. The impacts of global warming are already striking us, from the devastating mountain pine beetle infestation in the interior to the increasing severity of forest fires. All around the world, the impacts of global warming are causing alarm and concern.

A recent study published in *Nature* warned that by 2050, 18-37% of all land-based animals and plants could become extinct, due to the impacts of climate change. Our use of fossil fuels is imperilling the very future of our planet, its ecosystems and species. It is for this reason that both Michael Meacher, recent Minister of the Environment in Britain, and David Anderson, current Minister of the Environment in Canada, have said that climate change poses a greater threat than terrorism. We *must* pull ourselves out of the state of denial which acknowledges the threat from climate change, and yet continues to burn more fossil fuels, as if the two were not connected.

The development of an *Integrated Energy Plan for BC Hydro* that looks 20 years ahead is a timely opportunity to confront this denial, and develop a plan for the future based on sustainable, renewable energy, not fossil fuels.

The second threat comes from the imminent peaking of the world's oil supply. Colin Campbell and Jean Laherrere, two leading authorities on global oil supply, estimate 2005 for the world oil peak. The International Energy Agency thinks 2015. When we pass the half-way mark, the global supply of oil will fall short of demand, causing the price to rise dramatically. This will have a knock-on effect on farming, aviation, tourism, industry, and trucking. With each passing year, the situation will get worse, as the supply continues to shrink.

The third threat, which may hit sometime before 2015, comes from the imminent peaking of North America's natural gas supply. According to the Energy Information Administration, we may need 20% more natural gas by 2005 than we use today; 50% more by 2015. US gas production has flat-lined for fifteen years, and Canada's production is treading water. The scarcity will cause prices to rise while the immediate alternative – liquefied natural gas – brings with it an enormous risk of terror attack and explosion in the process of being shipped around the world.

The technologies to replace coal, oil and gas already exist, as does the impulse to begin the shift to a hydrogen economy.

To address these threats, BC needs policies that will accelerate investment in sustainable energy technologies, and a road map that will ensure a smooth and just transition to a sustainable energy economy, without a net loss of jobs.

Continued on Page 10

Wind, Sun and Water continued

Policy recommendations: Public ownership:

BC Hydro should retain public ownership of the transmission grid, and of BC's public hydroelectric projects.

Public Commission:

To develop public understanding and to involve the public, BC Hydro should set up a public Sustainable Energy Commission to work with BC Hydro on the development of its Integrated Energy Plan, and hold hearings around the province.

PowerSmart:

BC Hydro should accelerate its PowerSmart program, with clear targets and goals. It should create a $100 million energy efficiency loan fund, similar to Alberta's fund, financed by a public benefit charge on all hydro bills, recycling all of the revenue back to the consumer in the form of efficiency rebates and incentives. A 0.2 cents per kWh ($0.002) charge on all BC customers would bring in $100 million a year. (50,000 GWh x $0.002 cents). It should create special programs to retrofit low income and rental housing, encourage community energy planning, and use time-of-use metering and pricing to match the supply of energy to the peak demand.

Energy Efficient Buildings:

As part of its energy efficiency strategy, BC Hydro, with the Ministry of Energy and Mines, should research a system of tax and financial incentives that will encourage the construction of buildings that use 50% less energy than is required under the current building code, and others that are zero net energy buildings. Starting in 2010, the new code should be made applicable to all homes, as a condition of sale into the real estate market, following the model that San Francisco adopted in 1980, and is used by Berkeley CA to this day.

Demand Side Management:

With a well planned strategy of incentives, we should be able to reduce our overall energy use by 25% - 30%, freeing up 3,000 to 4,000 MW of capacity. The Rocky Mountain Institute's recommendations for Vancouver Island's future energy supply are full of intelligent demand side management initiatives that could be adopted.

Sustainable Sources:

BC Hydro should promote the use of sustainable energy to meet 100% of BC's power needs by 2010 by combining energy from BC's existing hydro-dams with energy from the wind, landfill gas, micro-hydro, geothermal electricity and heat, ground-source and air-to-air heat, tidal and wave energy, solar PV, solar hot water, biomass from sustainable sources, hydrogen from sustainable sources, and sustainably managed energy storage systems; (ie., BC's hydro dams). To phase out the use of natural gas by 2010, BC would need to generate an additional 1286 MW of firm sustainable energy, replacing the Burrard Thermal plant (950 MW); the Prince Rupert Generating Station (46 MW); the Fort Nelson Generating Station (50 MW); and the Campbell River ICP plant (240 MW).

Wind Energy:

A 2002 study of the land-based wind energy around Port Hardy, Port Alice and Prince Rupert found a technically viable potential for 4,800 MW. Uniterre's Nai Kun wind power proposal off Haida Gwaii is for 700 MW; Sea Breeze's proposals for 7 sites indicate a potential of 2,845 MW. All wind power MW data should be divided by 2.25, since wind blows for a year-round average of 8-10 hours a day, while hydro and gas generating stations can run for 20 hours a day. 4,800 MW of wind energy is therefore the equivalent of 2,133 MW of firm hydropower. (BC uses around 12,000 MW of power capacity, which generates around 50,000 GWh of power a year.)

Tidal Energy:

In 2002 BC Hydro commissioned a study of BC's tidal energy potential. Triton Consultants looked at potential technologies, BC's tides, and 100 sites along the coast (excluding Haida Gwaii) where the current is over 3 knots (1.55 metres/sec). They found 10 sites which could produce over 100 MW each, the best being in Johnstone Strait. There are 55 sites where the current reaches 2 metres/sec, which could produce 2,225 MW, the equivalent of around 1,000 MW of firm hydropower. BC also has wave energy resources that await development.

Solar Energy:

Solar PV is ready, but the payback is too slow to encourage any serious use in BC, since the price of power in BC is only 4 cents US/kWh, compared to 10 cents in the US, and 24 cents in Japan, which is leading the world solar revolution. This will almost certainly have changed by 2015 due to mass production, causing the price to fall enough for every new home to be built with a 2kW solar system on the roof. For this reason, solar PV should feature in BC Hydro's long-term integrated energy plan.

Microhydro:

In 2002, a study for BC Hydro showed that the province has a potential 'run of the river' green energy capacity of 2454 MW of small hydro on the mainland alone, sufficient to produce 10,700 GWh of power, at prices ranging from 3 to 30 cents kWh. BC

Continued on Page 11

also has geothermal energy resources at Meager Creek, 70 km north of Pemberton, which could produce 100 to 250 MW of capacity.

Green Heat:

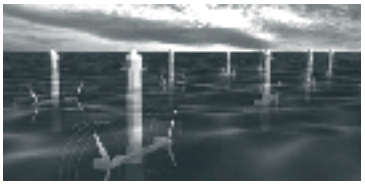
There are three mature and proven technologies which can produce heat in a sustainable manner, all of which await proper market development. The first is solar hot water; almost every building in BC could support a rooftop solar system, capable of producing 50% of the hot water needs for a family of four. The second is solar air heating, using solar wall technology on the south wall of a building. The third is ground-source heating (also known as earth energy, or geo-exchange), using a heat pump to tap into the stored solar energy in the earth, returning three units of energy for every one that's needed to run the pump. We also have the potential to use advanced biomass combustion systems, using forests wastes, to generate both heat and power.

Smart Grid:

The integration of these varied and diverse distributed energy systems should be achieved through the development of a smart grid, using real-time communications systems to allow market price to match demand.

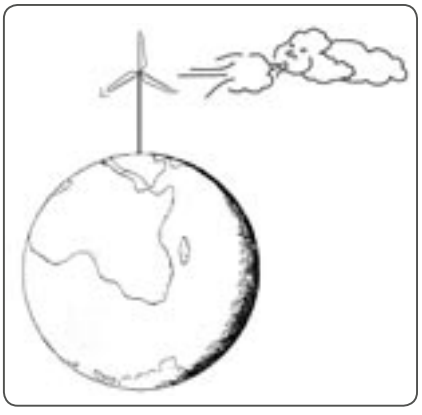
Investor Security:

BC Hydro should work with private power suppliers to remove barriers and create a stable policy and financial framework to give investors the long-term security they need. All companies providing power to the BC grid should be encouraged to adopt sustainability as the driving force of their businesses, and be required to adopt triple-bottom line accounting and reporting to demonstrate social, environmental and economic responsibility, as BC Hydro itself does.



Incentives:

The BC government should use taxes, subsidies and other incentives to encourage the growth of the sustainable energy sector in BC, while ending subsidies and grants to natural gas and other fossil fuel producers. The BCUC should guarantee a retail price of 7 cents/kWh for the first 3000 MW of new wind and other sustainable energy capacity, for a period of



10 years, and support the development of tidal and wave energy by guaranteeing a price of 20 cents/kWh for 10 years for pilot plants generating up to a total of 6 MW. The price impact of guaranteeing 20 cents/kWh for 6 MW is very small. 6 MW is 0.05% of BC's power capacity, so the additional 14 cents/kWh above today's price comes to 0.05% of 14 cents = 0.007 cents/kWh, or just $1 on a typical annual household power bill of 15,000 kWh.

Fossil Fuel Moratoria:

Fossil fuels have provided humanity with an incredible source of cheap, abundant energy. There is now a strong scientific consensus, however, that our use of fossil fuels is the leading cause of global warming, which is bringing a dangerous disruption of the climate, weather, and ecosystems around the world. The long term environmental costs of burning fossil fuels are no longer worth the benefits. The BC government should place a moratorium on the use of coal and natural gas to generate electricity after 2010, while retaining the existing moratorium on the use of nuclear energy, and instating new moratoria on the use of coalbed methane and methane hydrates, and a moratorium on the use of garbage incineration as a source of power, due to the release of toxic pollutants.

Jobs:

A sustainable energy strategy for BC will generate many new jobs, and stimulate the economy. Studies have shown that sustainable energy projects create 60 – 90 times more jobs than fossil fuel projects, and many new jobs will also be created through energy efficiency programs. The Helimax report on BC's wind energy potential shows that if 1,200 MW of wind energy were installed by 2011 (a $1 billion investment), this would generate 8000 job-years (eg 800 jobs for ten-years). If a wind turbine assembly plant was built with a cluster of suppliers, this would generate 50,000 job-years.

We owe it to our children, our grandchildren, and the future sustainability of the whole planet to stop using fossil fuels, and to embrace sustainable energy wholeheartedly. The technologies are ready, the people of BC are ready, and the world is ready.

■

Guy Dauncey is an author, speaker and consultant who specializes in green building and ecovillage development. He is the author of *Stormy Weather: 101 Solutions to Global Climate Change* (New Society Publishers, 2001), and is President of the newly forming BC Sustainable Energy Association. This article has a few modifications and additions from the original submission to BC Hydro.

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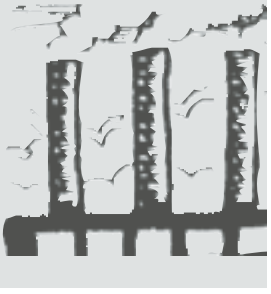
Preventable Cancer on Rise

Cancer is an epidemic: 41% of Canadian males and nearly 38% of Canadian females will develop some form of the disease, and 27% of males and 23% of females will die from it. And the incidence is going up. From 1970 to 1998, after controlling for aging, the incidence of cancer in Canada increased by 35% for men and 27% for women. After years of denial, the US National Cancer Institute and the American Cancer Society admitted at the turn of the millennium that the incidence of cancer is expected to double by 2050.

While the medical profession and cancer research institutions attribute most of the cancer increase to genetic and lifestyle factors, the authors of a new Canadian Centre for Policy Alternatives study assert that carcinogens in our air, water, food, and workplaces are significant causes of cancer. Economist Robert Chernomas and researcher Lissa Donner draw from reputable studies and findings to conclude that many cancers could be prevented if the cancer-causing chemicals were removed from our environment.

In 2001, Canadian industries released 18 and a half million kilograms of known carcinogens into our air, soil, and water.



They note that in 2001, Canadian industries admitted releasing 18 and a half million kilograms of known carcinogens into our air, soil, and water. "Such industries have been called 'merchants of death' for putting profits ahead of human health" — but they have been aided and abetted by a lax regulatory and enforcement system that allows such deadly pollution to continue.

The authors are critical of the main objective of the fight against cancer, which is to find treatments or cures rather than promoting preventive measures. "Industries have argued that for every carcinogen there is a safe level of exposure. But our guiding principle should be that the safest exposure is no exposure."

Meanwhile, worker exposure is probably responsible for up to 20% of cancers. As the Canadian Auto Workers have stated: "Scientific evidence demonstrates that blue collar workers are bearing a disproportionate share of the cancer burden. Workers in certain carcinogen laden industries are contracting cancer at rates well beyond those experienced by the general population. At least 60 different occupations have been identified as posing an increased cancer risk. Studies show that the auto industry is producing laryngeal, stomach and colorectal cancers along with its cars. The steel industry is producing lung cancer along with its metal products. Miners experience respiratory cancers many times higher than expected. Electrical workers are suffering increased rates of brain cancer and leukemia. Aluminum smelter workers are contracting bladder cancer. Dry cleaners have elevated rates of digestive tract cancers. Firefighters contract brain and blood-related cancers at many times the expected levels. Women in the plastics and rubber industry are at greater risk for uterine cancer and possible breast cancer. The list goes on and on."

Chernomas and Donner argue that the war on cancer can be won, but that the social, economic and political changes that are needed will require collective action by the environmental, occupational health and nutrition movements. Acting together, they can "stem the tide of cancer that is sweeping across Canada."

—Canadian Centre for Policy Alternatives
http://www.policyalternatives.ca

No Griz Bits and Pieces From BC

In a move applauded by the Environmental Investigation Agency and Raincoast Conservation Society, the 15 European Union countries have unanimously banned all imports of grizzly bear hunting trophies from British Columbia. The decision was based on the failure of the BC government to protect its grizzly bear population despite several promises to do so. Under both EU and international legislation, imports can only be allowed if they do not have a detrimental impact on the species concerned.

In June 2003, the EU informed the BC government that for imports to continue, it must implement the recommendations of its Independent Scientific Panel, which included setting up grizzly bear no-hunting reserves of protected habitat throughout the province and aggressively addressing human access into BC's wildlands. However, for the vast majority of these recommendations, no progress has occurred and several decisions that are contrary to the recommendations have been made.

—Press Release, Environmental Investigation Agency and Raincoast Conservation Society, January 2004

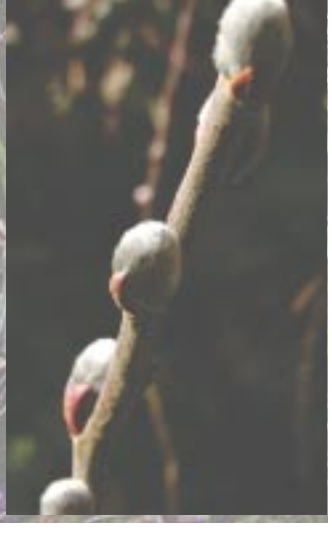
Wetlands — Part of the Watershed

Gravel, peat and firewood are extracted from wetlands, water is drained and wetlands are paved over. Then one day the light goes on and people begin to recognize how all the parts of the watershed are connected.

by Lisa Mose

When human use and the ecological condition of watersheds are assessed, the community considers the functions of wetlands, usually for the first time. Richard Case, a Registered Professional Biologist, and Sue Hemphill of the Scout Island Nature Center and an environmental educator in the Cariboo, both 2003 Wetlands Institute participants, found this to be the case in the San Jose watershed, near Williams Lake, BC. In an assessment Case conducted in the Williams Lake River valley (the urban part of the San Jose watershed), wetlands were found to have the potential to provide rearing habitat for salmon, to improve in-stream water quality and to treat stormwater run-off.

The Williams Lake River Valley contains the lowest extremity of the San Jose watershed, draining Williams Lake into the Fraser River. Approximately 14 km in length, the River Valley, as it's commonly known, is unique in that it provides a relatively undeveloped, easily accessible natural area directly adjacent to the city of Williams Lake. This area supports open grasslands, shrublands, deciduous riparian and Douglas Fir forests. Four species of salmon live and spawn in the river and a wide variety of wildlife are found in the valley. Williams Lake Band and Soda Creek First Nations have lived in the valley for thousands of years. White settlements began in the 1860's and the river valley has been influenced since then by ranching, logging, saw milling, gravel extraction, municipal sewage treatment and storm drain runoff.



In the late 1970s, the Williams Lake Field Naturalists introduced the concept of conserving the River Valley as a valuable recreational and educational area. They expanded their efforts in the early 1990s when the Williams Lake

Rotary Club and a dedicated group of volunteers representing a number of interests began to secure funding to move towards the community vision for the valley. Between 1992 and 1998, plans and an ecological study were completed and extensive trail infrastructure was developed including 22 bridges, interpretive signage, toilets, parking, benches and tables.

In 2000, the San Jose Watershed Group working with the local Stewardship Coordinator, the City and ten other community groups organized the Watershed Health Walk. Over 300 people walked the valley, stopped to visit booths set up by community groups along the trail and welcomed Fin Donnelly as he arrived at the mouth of the Williams Lake River as part of his Fraser 2000 Spirit of the Salmon Swim. This awakened the broad community to this stunning valley right in the heart of their city.

In late 2000, development had reached a point where it was felt that volunteer groups and individuals could not be expected to effectively address issues and day to day management of the valley. As a result, the City of Williams Lake agreed to take on management responsibility. Under the direction of the Director of Leisure Services, a Trails Advisory Committee (TAC) was established. The TAC included groups involved with protection, restoration, enhancement and use of the River Valley. By July 2002, a plan for the River Valley was complete. It provided long term direction to the City of Williams Lake, other agencies and volunteers for the management of the River Valley. The plan attempts to capture the needs and desires of a range of interests, while maintaining the natural atmosphere of the valley. It also recognizes connections to existing and future trails within the Williams Lake trail network and reflects the Official Community Plan.

Hemphill notes that education is key in having residents consider their watershed and then work with each other to keep it healthy. Hemphill says that Case's valley assessment led to an awakening in the community. For the past three years, a wide variety of community groups, local businesses, local mills, the city, and Fisheries and Oceans Canada carried out projects that included planting, soil enhancement and placing large woody debris to begin natural ecosystems of the valley.

Over the years the BC Wildlife Federation's Wetland Education Program participants have reported similar scenarios. Gravel, peat and firewood are extracted from wetlands, water is drained and wetlands are paved over. Then one day people begin to wonder why water quality is poor, why flooding has increased and where the salmon have gone. The light goes on and people begin to recognize how all the parts of the watershed are connected.

When people do become interested, the key is to involve residents in a real hands-on way, says Sarin Warman, who works for Ducks Unlimited. She created the "Living by Water in the San Jose Watershed" project. Funded by EcoAction, the Real Estate Foundation and the Vancouver Foundation, it involves lakeshore landowners in naturalizing their shorelines to restore and conserve shoreline habitats. Warman works one-on-one with individual landowners to identify areas on their property where improvements to shoreline habitat will benefit them and the entire watershed. The project provides incentives such as restoration materials, technical advice and expertise, equipment and volunteer labour. Many people use the valley now for recreation, and they are all keeping an eye on the ongoing work.

Case, Hemphill, and Warman attended the 2003 Wetlands Institute in 100 Mile House, one of three courses offered by the BC Wildlife Federation's Wetland Education Program (WEP). The next Wetlands Institute will be hosted in Victoria BC, July 2005. WEP courses also include Wetlandkeepers and the Puddle Project and are all designed to assist wetland stewards to gain further knowledge and skills to conserve wetlands in their community.

Wetland stewards like Case, Hemphill and Warman are helping their communities to take a watershed perspective and thus bring wetland conservation and restoration into focus.

■

If you are interested in attending a WEP course contact Lisa Mose, 250-423-2654 or email *wetlands@bcwf.bc.ca*

The BC Wildlife Federation thanks the 2003 Wetlands Institute funders for their support: BC Cattlemen's Association, Ministry of Water Land and Air Protection, Public Conservation Assistance Fund, Weldwood of Canada, Canadian Council for Human Resources in the Environment Industry, BC Agriculture Council, Shell Environmental Fund, TD Friends of the Environment, and Canadian Wildlife Service.

Seeds of Deception

Government and industry are not telling us everything we need to know about genetically modified (GM) foods

Reviewed by Sue Frazer

Seeds of Deception: Exposing Industry and Government Lies About the Safety of the Genetically Engineered Foods You're Eating, Jeffrey M. Smith, 2003. ISBN 0-9729665-8-7, $17.95 pb., pp. 289, with index. Yes! Books, PO Box 469, Fairfield, IA 52556. Ph: (888) 717-7000 *www.seedsofdeception.com*

The Foreword is by Frances Moore Lappé. Thirty years ago she wrote *Diet for a Small Planet*, an explosive best-seller that challenged us to use the world's food resources more efficiently. Today, she says world hunger is further complicated—and compromised—by corporate globalization, agriculture monopolies, and genetically modified organisms. Her Foreword sets the stage for Jeffrey M. Smith's equally explosive exposé of how government and industry have lied to us and manipulated scientific information about the safety of our food.

This book's title, *Seeds of Deception,* highlights the main point of its content: government and industry are not telling us everything we need to know about genetically modified (GM) foods and food organisms (GMOs). Worse, the feeling conveyed is that of urgency to disclose essential knowledge about the instability—and the dangers—of genetically modified foods. In fact, the book is an exposé of the biotech industry written in clear language, leaving no doubt that politics and corporate greed have supplanted science as the principal factor in food safety for North American consumers.

Dr. David Suzuki, Canadian geneticist, has said bluntly in regard to GM foods, "Any politician or scientist who tells you that these products are safe is either very stupid or lying." (Oct.18/99, "Suzuki warns of Frankenstein Foods." CP Wire).

The driving concern throughout Jeffrey M. Smith's investigation is the effects that consuming GM foods will have on people. He tells us that one of the principal dangers lies in the fact that by altering genetic material, evolution is ignored. In a chapter titled, "What Could Go Wrong? A Partial List," is the basic fact that natural breeding works with single or similar species, while foreign (and largely synthetic) inserted genes can have unpredictable results, including human health hazards.

In fact, the book is an exposé of the biotech industry written in clear language, leaving no doubt that politics and corporate greed have supplanted science as the principal factor in food safety for North American consumers.

Industry manipulations in search of maximized profit have used entire populations, including humans, as guinea pigs. Monsanto has employed threats, intimidation, and bribes to gain compliance in the widespread use of GM corn, cotton, soy, dairy products, canola and, more recently, wheat, and from there into their various processed uses.

Remember the furor in Health Canada (analogous to the US Food and Drug Administration, FDA) when Shiv Chopra and five other scientists reported that they had been pressured to accept the rbGH (a form of bovine growth hormone) drug for cattle, despite human health concerns? These were later described to the Senate Committee by Dr. Margaret Haydon, another of Health Canada's scientists. Their Gaps Analysis Report indicated failures in the US experiments and (deliberate?) omissions in their reporting.

As well, veterinarians had showed that bovine growth hormone was a serious danger to cows. The FDA allowed the drug to be sold over the counter in the US, but because Ottawa only allowed veterinarians to control this GM drug in milk in Canada, it was withdrawn. It is significant that free-ranging cattle and hogs, as well as squirrels, rats, raccoons, mice, deer, and elk will refuse to eat GM products.

Despite cover-ups through the media, and the invalid claim that only GM foods (not fair food distribution) could eliminate famine, US government scientists in 1999 revealed concerns about toxins, allergies, new diseases and epidemics, nutritional, mental, and environmental dangers in GM foods. Most industrial countries now favour labelling and regulation to try to control deadly epidemics.

The book gives information on which foods and additives likely contain GMOs, and concludes with positive diet suggestions. Overall, it explains the subject matter very well for the average reader, and is well-referenced.

Jeffrey M. Smith founded the Institute for Responsible Technology. He lives in Iowa surrounded by GM corn and GM soybeans.

Repeal the BC *Streamlining Act*

It undercuts the basis of parliamentary democracy

On December 2, 2003 British Columbia's provincial government passed the *Significant Projects Streamlining Act (SPSA)*, formerly Bill 75. The SPSA allows Cabinet and Ministers to overrule provincial or local laws, regulations, or bylaws, including environmental laws, if they are perceived as being "constraints" to projects designated by the government as being "provincially significant." Once designated, the Minister responsible for the project can overrule any requirement or approval that is "perceived to be a constraint" to the project.

The SPSA does not define what a "significant project" is or the criteria that would be used to determine one. Nor does the SPSA set out criteria for what "constraints" are. A constraint doesn't even have to be real – it only has to be "perceived." Still worse, the Minister responsible will not ever be required to give reasons accounting for his or her decision.

Traditional democratic principles have been undermined with the passage of the SPSA. Under normal conditions the legislative branch of government passes the laws. The executive branch administers them. By delegating to the Cabinet and its Ministers the power to suspend provincial laws and replace them with any other requirement, the new law puts into question the role of the Legislature in debating and passing laws.

Outside of emergency legislation like the War Measures Act, no other legislation in Canada, the US or Britain passes such extensive powers from parliament and legislatures to the executive. The SPSA erodes the fundamental rule of our parliamentary system.

It is not too late for citizens to ask for action to be taken, and all of us need to make our voices heard on this issue.

■

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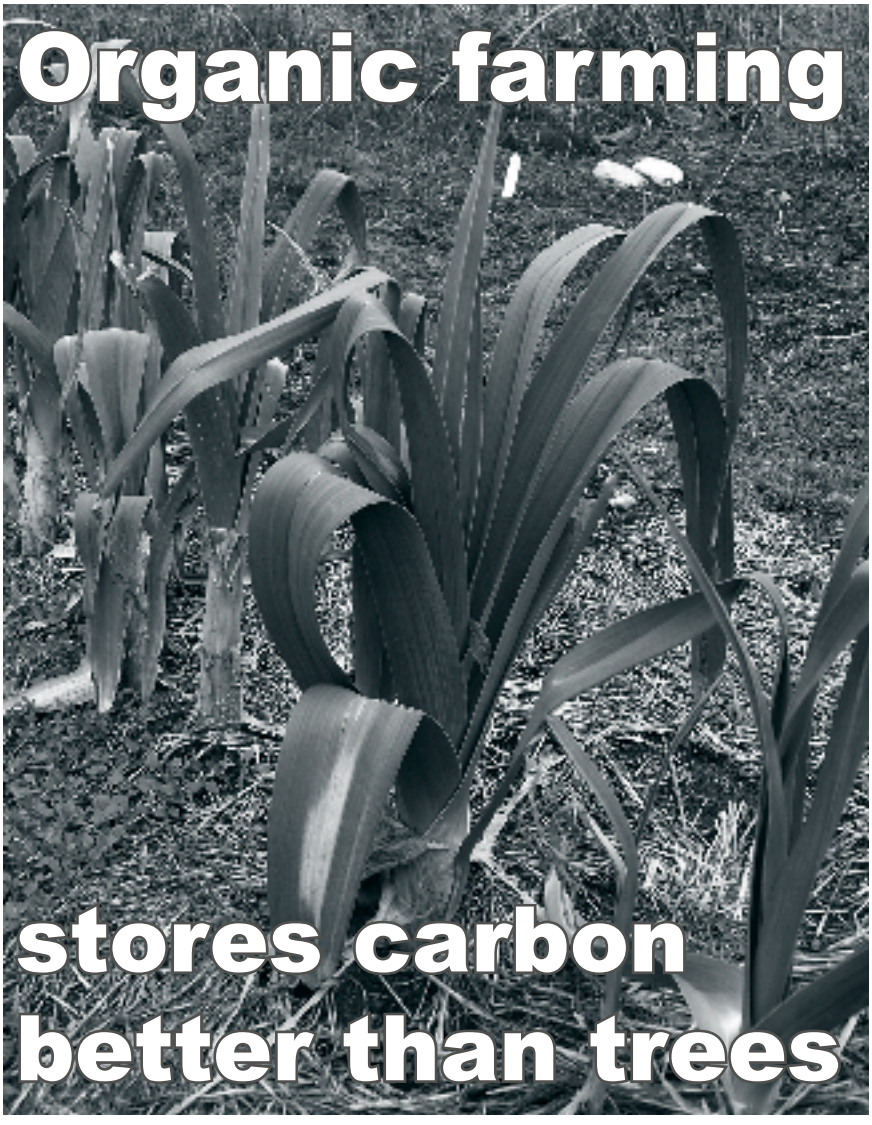
Action: Contact Premier Campbell and remind him that during his election campaign he promised open and accountable government. Stress that the Significant Projects Streamlining Act contravenes fundamental principles of democracy that we all cherish. Ask the Premier to restore public confidence by immediately repealing the SPSA.

Hon. Gordon Campbell, Premier,
Legislative Buildings,
Victoria BC V8W 1X4
Phone: 250-387-1715
Fax: 250-387-0087



Organic produce is not only yummy but good for you and the soil. Now the Rodale Institute has proved that organic agriculture doesn't just produce good produce — it's a wonderful carbon sink to combat global warming - big time!

The Rodale Institute's 23-year comparison of organic and conventional cropping systems confirms that organic methods are far more effective at trapping and holding carbon dioxide, a greenhouse gas, in the soil as beneficial organic matter.

Launched in 1981, the Farming Systems Trial (FST) is a 12-acre, side-by-side experiment, comparing three agricultural management systems: one conventional, one legume-based organic, and one manure-based organic. In 23 years of continuous recordkeeping, both organic systems have shown an increase in soil carbon of between 15-28%, while the conventional system has shown no statistically significant increase. For the organic systems, that translates into more than 1000 lbs of captured carbon or about 3670 lbs of CO_2 per acre-foot per year, not even counting the reductions in CO_2 emissions represented by the organic systems' lower energy requirements.

An analysis of FST energy inputs, conducted by Dr. David Pimentel of Cornell University, found that organic farming systems use only two-thirds of the energy required by conventional farming systems, largely because of the massive amounts of energy required to synthesize nitrogen fertilizer.

In the FST, soil carbon levels increased more in the manure-based organic system than in the legume-based organic system, presumably because of the incorporation of manures. The study also showed that soil carbon depends on more than just total carbon additions to the system — cropping system diversity or the carbon-to-nitrogen ratio of inputs and their decay rates may have an effect.

The work of another Rodale research collaborator, Dr. David Douds of the Agricultural Research Service, suggests that healthy mycorrhizal fungi populations in the organic systems also slow down the decomposition of organic matter, thus retaining carbon.

The carbon cycle

Scientists are developing an increasingly sophisticated picture of the global carbon cycle. Total carbon storage provided by different parts of the global system — terrestrial vegetation, the surface ocean, the deep ocean — have been quantified, as have the annual fluxes of carbon among them. CO_2 emissions from human and animal activities now stand at about 8.9 billion US tons per year, while net atmospheric CO_2 accumulation is 3.5 billion US tons. In other words, 40% of annual human-induced carbon emissions contribute to build-up, while the remaining 60% are absorbed by the oceans and plants.

Forty per cent of annual human-induced carbon emissions contribute to build-up, while the remaining 60 per cent are absorbed by the oceans and terrestrial plants.

Farmlands beat forests as a carbon "sink"

Proposals to expand natural carbon sinks as a partial remedy for global warming initially focused on reforestation. Changes in land use, including the loss of forests to tillage and grazing, were known to be a major contributor to the greenhouse effect. As recently as the 1970s, total accumulated carbon emissions from changes in land use exceeded total emissions from the burning of fossil fuels. Politicians hoped that escalating fossil fuel consumption could be balanced by vast forests breathing in all that CO_2.

Data like those emerging from the Farming Systems Trial, however, are revising that idea. The soil itself may make more of a difference than what's growing in it. On a global scale, soils hold more than twice as much carbon (an estimated 1.74 trillion US tons) than does terrestrial vegetation (672 billion US tons). Practices like reduced tillage, the use of cover crops, and incorporation of crop residues can further dramatically alter the carbon storage of arable lands.

From a net loss of soil carbon to a net gain in one easy step

Dr. David Pimentel calculates that US agriculture currently emits about 925 billion pounds of carbon dioxide each year from crop and livestock production. So, what would happen if all those US acres converted to organic production?

The British Royal Society has estimated potential carbon dioxide (CO_2) sequestration on the world's 2.5 billion acres of agricultural soils at 6.1 to 10.1 billion US tons per year for the next 50 years. Another estimate puts the total amount of CO_2 that could be captured in developing countries at 1.7 billion US tons over the next decade. In short, carbon sequestration via adoption of organic agriculture could have a substantial impact on global warming.

Organic farming incidentally also reduces erosion, minimizes impact on native ecosystems, and improves farmer livelihoods. Compared to forests, moreover, agricultural soils may be a more secure sink for atmospheric carbon, since they are not vulnerable to logging and wildfire.

# of 320-acre farms	# of cars off road
1 farm	117 cars
1,000 farms	117,440 cars
10,000 farms	1,174,000 cars
100,000 farms	11,744,000 cars

Carbon credits for organic

The Rodale Institute and the Pennsylvania state departments of agriculture and environment have joined forces to explore mechanisms by which farmers and landowners could quantify the carbon sequestered on their properties and receive a payment from the state or federal government for "ecosystem services provided."

Farmers might even participate in emerging 'carbon-trading' markets around the world. Such markets are rapidly expanding in the European Union and elsewhere. (See, for example, *www.co2e.com*, a greenhouse gas brokerage firm based in London.)

However, the whole business of credit for carbon-sequestration activities under the Kyoto accord is problematic, because of the lack in 1997 of good carbon inventory data that could be factored into the nation-by-nation emissions-reduction targets.

Unfortunately carbon sequestration by organic farming, like carbon capture through reforestation, is a short-term or 'bridge' solution, a way of buying time for more fundamental changes. Ultimately, global climate change can only be fully addressed through rationalization of energy policies, reductions in fossil fuel consumption, and improvements in emissions-control technologies. Among the possible short to medium term solutions, however, organic farming has a lot going for it.

Compared to expensive, experimental, high-technology projects like underground injection, global transitioning to organic farming looks cheap and easy. It's a step toward solving carbon build up and climate change that brings with it a wealth of other environmental benefits.

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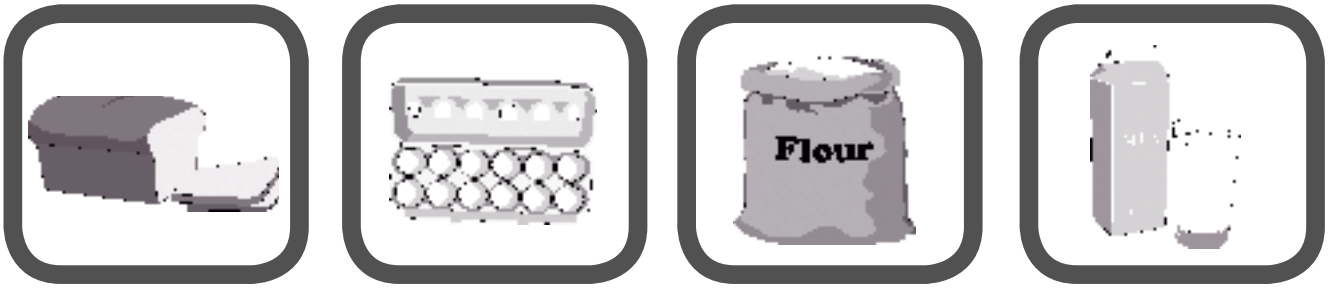
Fast Facts

- If only 10,000 medium sized farms converted to organic production, they would store so much carbon in the soil that it would be equivalent to taking 1,174,400 cars off the road.
- Converting the US's 160 million corn and soybean acres to organic production would sequester enough carbon, 293 million tons of CO_2, to satisfy 73 percent of the Kyoto targets for CO_2 reduction in the US.
- American agriculture as currently practiced emits a total of 1.5 trillion pounds of CO_2 annually into the atmosphere. Converting all US cropland to organic would give a net INCREASE in soil carbon of 734 billion pounds.



Agriculture In Our Time [And Place]

by Maggie Paquet

There's no question that the seeds of civilisation were sown with the beginning of agriculture. In fact, at different times, agriculture has shaped the rise of civilisation in every region of the world. In the "fertile crescent" between the Tigris and Euphrates rivers, it was rye. In Mesoamerica, it was squash and maize. In Egypt, it was the precursor of modern wheat. In China it was rice. Most of these were wild grasses that became domesticated, likely through a combination of the effects of climate change and inventiveness by small groups of people trying to feed themselves.

Between 13,000 and 7,000 years ago there were a number of alternating cold-dry and warm-wet periods. During these times, hunting and gathering wasn't as successful as it had been, and the ranges and habitats of plants and animals changed. As regional climates grew cold and drought-ridden, people collected wild foods to take with them when they moved to warmer, wetter areas and cultivated them.

"Necessity is the mother of invention" and, because humans are resilient and adaptable creatures, agriculture, or the use of deliberate practices for growing and harvesting plants and animals, came into being. People learned about genetic selection. And the fabric of civilisation has ever since been interwoven with the threads of agricultural innovation.

As agriculture spread, people began in earnest to take ownership of places where food grew. The more successful families created wealth for themselves and their communities. It wasn't long before agriculture came to be associated with political power. The pharaohs of Egypt, Rome's senate, the Aztec kings controlled the food stores of their civilisations. It's not much different today. Only it's not governments that wield the big stick of control over who grows what, where, and how much farmers get paid for their labours—or even who gets to eat—it's "global market forces" and, increasingly, biotech corporations like Monsanto.

While the marketplace is the determinant for the cost of food commodities, governments set policies and regulatory controls, and sometimes enter into trade agreements that result in ruinous effects on farmers. In the past few decades, this has certainly happened in Canada and in British Columbia.

In Vancouver Island's Alberni Valley, agriculture as a contributor to the local and regional economies has shrunk by about 70 percent from what it was, in part due to changing government policies. For instance, 25 years ago there were ten dairy farms, four or five hog farms, and a number of commercial poultry, beef, potato, and fruit and vegetable farms. Today, there may be four dairy farms left, no commercial hog, poultry or beef producers, and one or two comparatively small-scale vegetable and berry producers. There is one commercial greenhouse that grows mostly tomatoes and cukes.

When asked why this happened, former dairy farmers Bob and Ann Collins said it was due to a combination of factors. The price of grain rose. All the supporting infrastructure disappeared. Services, such as processing and transportation, were controlled from farther away. Where it used to cost one cent per litre to get locally produced milk to markets, soon all the local milk was trucked away and it cost producers three or more times as much money to get their products to market.

This meant as much as a 20 percent decrease in their already narrow margins. Profitability dropped like a stone. Farmers were told to "go big or go broke." The few who could afford to "go big" are still in business, but they took up the slack and the others either went broke or went out of the farming business. Some stayed small and took outside jobs to make ends meet. This was hard on farmers and hard on families. Some farmland was sold and subsequently lost to farming.

How does this affect the local economy?

Collins explained: "Take McKinnon's Dairy. They used to employ 16 people. There were a few part-timers, but mostly full-time employees who made a decent living. The workers lived in the Valley and they spent their money in the Valley, and all the infrastructure that supported the

The National Farmers Union, based out of Saskatoon, issued a press release on 6 Feb 2004 that said the "realised net farm income [of Canadian farmers] for 2003 is an estimated negative $13 million—the lowest level ever recorded, far lower than during the Great Depression." NFU goes on to say that "Realised net farm income from the markets alone, net of government payments, is almost negative $5 billion…"

NFU President Stewart Wells says "the net income wreck is the culmination of two decades of destructive government and corporate policies. Our federal government pursued free trade, free market, and deregulation policies while our corporate buyers and suppliers were busy merging to increase their power and reduce their competition. What did governments think would happen?" he asks.

"The government took away our hog marketing agencies, cut the Crow, ended the two-price wheat program, deregulated grain handling and transportation, presided over the destruction of our co-ops, and tied their own hands with trade and investment agreements. At the same time, transnational corporations merged until there was often just three or four of them left controlling each link in the agri-food chain. These corporate and government policies pushed family farmers to the edge of a cliff. In 2003, we fell off."

— www.nfu.ca; www.oneworld.net/external

business was in the Valley. But the public, ever on the lookout to save a penny, didn't give enough support to local producers. A quart of locally produced milk may have cost

"I have absolutely no passion for growing food anymore because people have no respect for where it comes from."

a few cents more than mass-produced milk from big farms outside the region. So local milk was trucked away and we traded those 16 jobs for a truck driver who brings milk into the Valley a couple of times a week and who might buy a cup of coffee and a sandwich at the local Tim Horton's."

Collins says, "I have absolutely no passion for growing food anymore because people have no respect for where it comes from. People have to be consistent and aggressive about seeking out and supporting local producers. But it's too easy to go to the supermarket and buy cheap food that was grown in Chile or Mexico, or wherever, and that's been soaked in pesticides and harvested while still unripe."

"A half-century after the Bengal famine [where, during British colonial rule, most of the food grown was exported for trade and for the UK instead of feeding hungry local people], a new and clever system has been put in place that is once again making the theft of the harvest a right and the keeping of harvest a crime. Hidden behind complex free-trade treaties are innovative ways to steal nature's harvest, the harvest of the seed, and the harvest of nutrition."

—Vandana Shiva, *Stolen Harvest* (South End Press, 2000) p.6 from: *http://www.globalissues.org/EnvIssues/GEFood Terminator.asp*
Vandana Shiva is head of the Research Foundation for Science and Technology.

About 10 years ago, Ann Collins and Lisa Daniels started Port Alberni's Farmers' Market under the auspices of the Farmers' Institute. It's been very successful for providing a venue for the public to buy some home-grown produce, including eggs, fruits and vegetables in season, honey products, cut flowers, locally processed meats, and locally made crafts. It's probably the only farmers market in BC that operates 12 months of the year. While it's successful and is in the process of expanding, it currently doesn't allow for the financial scale that farmers must maintain to keep their farms viable and support a family.

Says Collins, "People say they want to save farmland, but if they won't support local farmers, then they're asking us to save it at our own expense. It isn't going to happen. I'm just waiting for the day when a banker and a lawyer come walking up my driveway looking for something to eat."

"What will save local farming in the future will be for producers to get away from commodity production. Farmers will need to become innovative, to embrace some value-added component that people will pay a fair price for. Whether it's some form of agri-tourism or a specialty crop, such as a winery, farm diversification is key to rural sustainability."

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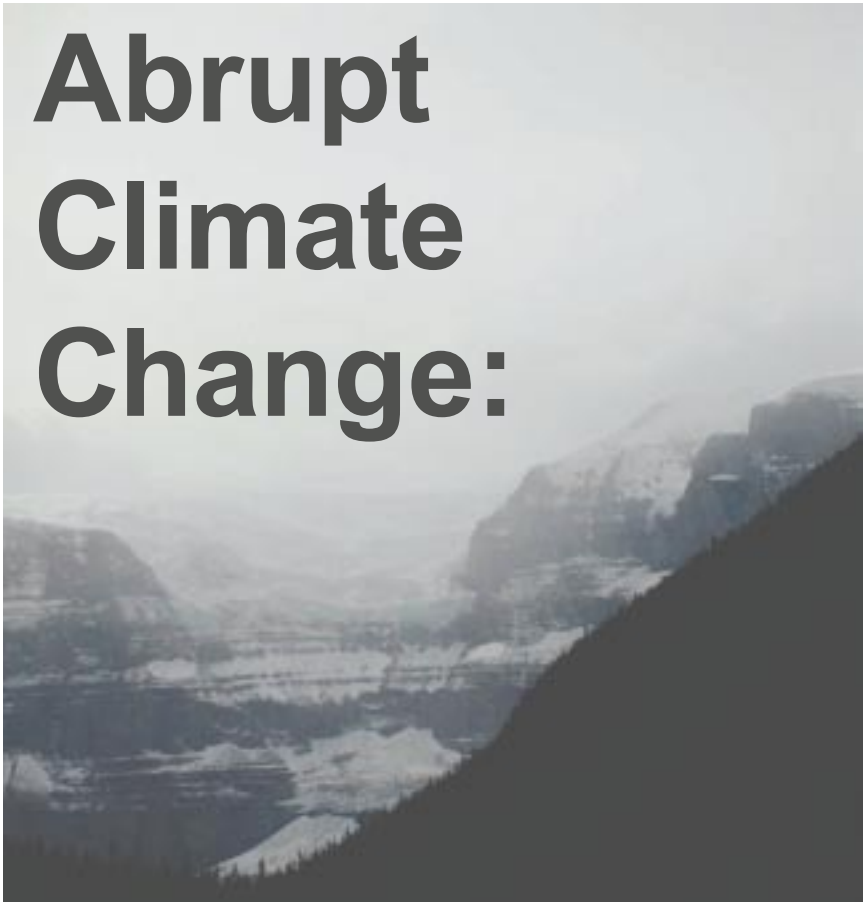
[See *Watershed Sentinel*, Vol 13 No 4, Aug-Oct 2003; "Farming in the New Millennium" and "How You Gonna Keep 'Em Down on the Farm?"]

Abrupt Climate Change:



Inevitable Surprises

It's time to shift the way we think about the rate of climate change.

by Peter Dixon

Recent information should jolt us out of our dream-time state that climate change is only a slow process and that its impact is probably not within our lifetime or even within our children or grandchildren's lifetime. New evidence by credible scientific institutions reveal that periods of gradual change in earth's past were punctuated by episodes of abrupt climate change.

The US National Academy of Sciences (NAS) Committee's *Abrupt Climate Change, Inevitable Surprises* report said that human activities could trigger abrupt climate change. It also stated, "Roughly half the north Atlantic warming since the last ice age was achieved in only a decade and it was accompanied by significant climatic changes across most of the globe." Warming at the end of the Younger Dryas (a cooling period) occurred in one especially large step of about 8 degrees Celsius in about 10 years according to the NAS.

Furthermore "Greenhouse warming and other human alterations of the earth system may increase the possibility of large, abrupt, and unwelcome regional or global climatic events," NAS said.

NAS has called this reorientation in the thinking of scientists a veritable "paradigm shift" and says "It has been well established by research over the last decade, but this new thinking is little known and scarcely appreciated in the wider community of natural and social scientists and policymakers."

The United Nations Intergovernmental Panel on Climate Change (IPCC) report *Summary for Policy Makers* said a "Sustained rapid climate change could shift the competitive balance among species and even lead to forest dieback, altering the terrestrial uptake and release of carbon" and that "There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities."

Scientists on the IPCC emphasized in another report, *Rapid Nonlinear Climate Change,* that "Seemingly small disturbances can create large and rapid responses when the climate system is near …threshold conditions." They raised the issue of "dangerous anthropogenic [human influence] interference with the climate system."

The US National Science Foundation (NSF) led the Greenland Ice Sheet Project 2 (GPS 2) in 1993 - involving 25 universities - to tease-out past climate scenarios from old trapped air gas bubbles and dust captured in ice-cores reaching a depth of 3000 metres (almost 2 miles). By analyzing 110,000 years of the Earth's climate history, the research revealed that swift change occurred many times in the past, from thousands of years to centuries to as little as a decade.

In recent times, the Helm and Illecillewaet Glaciers in British Columbia retreated 1,100 metres in the last

100 years and other glaciers are losing significant volumes. Also, the central Arctic sea-ice thinned by about 40 percent from 1993 to 1997.

Glaciers are highly responsive to rapid climate change and they are receding rapidly in many areas.

The GPS 2 and its nearby counterpart the European Greenland Ice Core Project compared data, concluding that the well-dated ice-core records shift the commonly held view that climate variability only operates on a slow time scale. According to the National Research Council this discovery is supported by palaeoclimatic records from marine sediment cores and tree rings that showed periodic episodes when the climate changed rapidly within a few years.

The US Atmospheric Palaeoclimatology Program of the National Geophysical Data Centre came to the same conclusion: rapid step-like shifts in climate variability over decades or less, as well as climate extremes that persist for decades, occurred repeatedly in recent earth history.

It is clear that there were abrupt climate changes in the past and they will very likely be repeated in the future. It reinforces our concerns about the human influence on climate change due to greenhouse gas emissions. The National Research Council of NAS said, "Current trends along with forecasts for the next century indicate that the climate averages and variabilities likely will reach levels not seen in instrumental records or in recent geological history." The hazards are disruptions to ecosystems, economic systems, and certainly to the safety of humans living in vulnerable locations.

Could greenhouse gas emissions by humans be the pressure point that flips the switch to abrupt climate change? Nature has many examples where the unusual application of force causes unexpected behaviour.

Is abrupt climate change a possibility within the lifetimes of our children and our grandchildren, perhaps even our own? Policy makers in governments and industry should take note and act accordingly. ■

Dragging the 19th Century into the 21st

In reaction to the high price of natural gas, at least 94 coal-fired electric power plants with 62 gigawatts capacity, enough to power 62 million homes, are now planned in 36 US states. The US has 250 years' worth of reserves and coal already generates about half of its electricity. The burning of coal currently produces more airborne mercury and greenhouse gases than any other single source.

—Christian Science Monitor, February 2004 http://www.csmonitor.com/2004/0226/p01s04-sten.html

It's a Security Issue

A report commissioned by the Pentagon, and leaked to *Fortune Magazine*, has warned that global climate change is the biggest security issue facing the United States. The report cited the possibility of catastrophic sudden climate change by 2020, leading to the death of millions and the breakdown of global systems under sea rise, violent weather, shortage of fresh water, massive waves of environmental refugees and severe civil unrest. *—The Observer/UK, February 2004*

Exxon's Share Of Climate Change

Over the past 120 years, the operations and burning of the products of oil giant Exxon Mobil and its predecessors since the foundation of the Standard Oil Trust in 1882, have caused between 4.7 and 5.3% of all man-made carbon dioxide emissions across the globe. The figures, unveiled by Friends of the Earth International in Exxon's Climate Footprint, show that Exxon's total carbon dioxide emissions in the past 120 years, at 20.3 billion tonnes, have been about three times the current total annual global emissions from fossil fuels.

This is the first time a company's historic contribution to global climate change has been calculated and could prove vital in paving the way for compensation claims against companies by victims of global warming caused by man-made pollution. ExxonMobil was chosen as the first company for such an assessment because it has repeatedly attempted to undermine the scientific consensus on climate change and actively resisted attempts to limit carbon dioxide emissions.

ExxonMobil trades as Esso, Mobil, Imperial Oil, Tonen General and Exxon in different countries.

—Friends of the Earth Press Release, January 2004

The full report is available at *http://www.foei.org/publications/index.html*

MillWatch SPECIAL REPORT MARCH 2004

Using Less Paper

A darn good place to start building an environmentally preferable (EP) paper procurement policy

by Wayne Cullen

So much for a paper-less world.
Those piles of reports, each thicker than a pair of Dagwood sandwiches contending for space on desks everywhere belie the paper-less predictions.

Not only that, many of those reports don't even get looked at. Who could possibly analyze all that data? The piles just sit there until they slip off the side of the desk, hopefully into a recycling box, but too often into the garbage. …and another tree is felled…

Global paper consumption has more than tripled over the past 30 years.

Almost half of the trees harvested in North America go to the production of paper.

Is this really the best way to use our natural resources – especially those that can take decades, even centuries to replenish, and which are a significant source of the very oxygen that allows us all to continue breathing?

But what about recycling? Haven't we improved the situation by recycling over the last few decades?

Although recycling paper at home and at the office has become a common practice for a number of years, it turns out that in Canada we recover only 44 % of all paper products consumed, including only 15 % of printing and writing papers, and magazines. And between 90-95% of all office and printing paper products consumed are still made with virgin pulp fibre.

Why bother with all this recycling and saving paper nonsense?

The pulp & paper industry is one of the most environmentally demanding and damaging industries. It emits toxins into the air and water, causes greenhouse gases, creates tons of solid waste demanding landfill space, and uses enormous amounts of precious resources: energy (4% of the world's total), fresh water, and of course, trees.

Big picture, there are several ways to mitigate the overall harmful effects of the industry – using less toxic chemicals in the production process, using alternative materials for pulp fibre – like hemp and kenaf, halting the harvest of old-growth forests, recycling as much post-consumer fibre (paper) as possible and reducing the use of paper.

The latter is the focus of this article, which includes some practical tips for using less paper. The workplace is also the focus of this article because while individual consumers can do their part by following the same practices, it is undoubtedly bulk purchasers – businesses, governments, non-profit organizations – that possess the buying power needed to create change in the pulp and paper industry.

Many organizations are currently discovering it to be expedient to adopt socially responsi-

For paper to be considered Environmentally Preferable (EP), it should have at least two of the following characteristics:

☑ Significant (at least 30%) post-consumer recycled content.
☑ Bleaching technologies with no chlorinated substances (totally chlorine free).
☑ Forest Stewardship Council-certified forest management on virgin fibre sources.

NB: In addition, the inclusion of non-wood and agricultural fibres increases the preferability.

ble polices as part of their standard operational procedures. One way of demonstrating an acceptance of that responsibility is through EP procurement policies. Since paper is such a ubiquitous commodity in almost every organization, an EP paper policy is an important component of any "green" purchasing strategy.

Potential organizational benefits of an EP paper policy:

- Using some of the paper saving tips below can easily offset any initial cost differences between buying recycled and non-recycled paper. Net expenditures can actually decrease.
- Favourable public image and customer loyalty or credibility leading to long-term economic benefits.
- Employee pride.
- Distinguishing a company from its competitors, and capturing a burgeoning environmentally-conscientious consumer base.
- Not missing out on an industry/national trend toward socially responsible investing, leading to healthier returns for shareholders.

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To lower costs and increase convenience, we encourage you to place your orders on line at *www.rfu.org/buyingclub* We will send you your invoice by fax or email, and *prepaid* orders will be delivered at the end of each month.

Reduce – Reuse – Recycle

Here's how the "Reduce, Reuse, Recycle" trio applies to the EP paper effort.

Starting with the latter –

Recycle: Of course having a recovery (recycling) system for paper products is a key component, as ultimately, virgin fibre is replaced by recycled fibre to produce paper.

Resistance to Using Recycled Paper: Cost, quality, brightness and availability are the most often heard objections to recycled paper. A lot of this negativity is based on experiences when recycled paper was first introduced into the marketplace.

First, the availability of EP paper will be solved with more demand. And today, recycled paper is priced very competitively with non-recycled equivalents, especially for most standard use papers. Due to technical advances, there is virtually no discernable difference in the quality of some EP and virgin papers. And while EP papers may not attain the brightness of those made from virgin pulp and bleached with chlorine derivatives, they can be made white enough for almost any purpose. In any case, greater degrees of whiteness add nothing substantial to the usefulness of paper; it is mainly an aesthetic preference. In Germany, bright white paper has a negative connotation because it is considered environmentally unfriendly.

Re-use: Paper can be used more than once, as scrap paper, for printing on the reverse side, with the use of new labels on file folders for example, etc.

Reduce: i.e. paper-saving. The emphasis here is on waste 'prevention.' Using less and eliminating needs for paper and thereby reducing purchasing costs.

Conclusion: It is widely acknowledged that current patterns of consumption in North America are not sustainable. Our lifestyle choices in the West constantly intensify demands on natural resources and create escalating environmental damage. The population of the world is growing, and furthermore, the developing world aspires to the Western lifestyle.

Our consumption choices are replete with issues of responsibility, for future generations even more than for ourselves. What we as consumers decide to purchase determines the types of products offered. Businesses will respond to the ever-increasing demand for environmentally friendly alternatives to their products and services, as evidenced by phenomena such as the expansion of ecotourism, organic food, natural clothing fibres, etc.

Trees, and forest eco-systems, are a resource on which we need to minimize our demand. While we can plant trees, we cannot recreate ecologically diverse forests. Using less paper is one of several components of a total "going green" paper strategy that will help preserve our forests, and it is an excellent and easy place to start.

Tips for using less paper in the office

☑ Purchase photocopiers that have double-sided copying capacity. Program double-sided copying as the default, requiring users to manually choose single-sided if needed.

☑ Purchase fax machines that use plain paper to eliminate the need to copy thermal sheets (because of thermal paper's tendency to fade quickly and respond poorly to highlighting).

☑ Use e-mail and other telecommunications and computer media instead of paper memos or communication, etc. whenever possible.

☑ Don't print all your e-mails. Use a software organizing system.

☑ Send out and keep reference documents electronically – don't make hard paper copies.

☑ Create letterhead stationary through the use of templates in software documents accessible to all employees, thereby providing an always up-to-date letterhead design.

☑ Reduce a legal size sheet to letter size when possible.

☑ Make smaller notices, forms and letters – print two on each sheet of paper and cut it in half.

☑ Use fax stick-on labels – eliminate cover sheets.

☑ Program your fax to eliminate confirmation sheets if they are not being used.

☑ Use a two-way envelope to send out invoices, whereby customers can easily refold the envelope for return of their payment.

☑ Circulate reports around the office in a mailing envelope instead of making a copy for each person. As each person reads it, he/she forwards it to the next person on the list.

☑ Choose the right paper for the job. For internal and most external uses recycled, non-chlorine processed papers are usually satisfactory. Extra white glossy paper is only sometimes necessary – for fine art reproductions, photographic prints, etc.

☑ Use less thick paper (less weight) than customary when feasible. This reduces the amount of fibre needed and can also save money in postage.

☑ Use uncoated paper. Coated paper is in most cases less desirable for recycling mills because the clay coating is not recyclable.

☑ For documents like books, manuals, catalogues, brochures etc. there are on-demand publishing companies, so you don't have to estimate how many copies you might need over the long term, but instead are able to request copies as needed, or have documents sent to desired recipients by e-mail. Trafford Publishing (www.trafford.com) in Victoria B.C. provides this service.

☑ Software adjustments: Changing the default settings in your software programs can save paper, especially for draft documents or for internal use only. Reducing the margins, decreasing the font size and line spacing and the use of a relatively inexpensive software program like fineprint (*www.fineprint.com* or *www.axion.net/fineprint* to download a free demo) can reduce paper consumption by up to 50%. If the bulk of your word processing can be done with these settings, it makes sense to re-set the default settings, altering the parameters when necessary. (See *www.rfu.org* for more details on software adjustments.)

Working with all your vendors (not just paper suppliers)

Requiring all vendors to cooperate with your environmental requirements is well advised. Many companies now perceive their vendors as partners, not just product suppliers. In this spirit of partnership, they are working together to save money and improve environmental performance.

Regarding vendors, some paper-saving strategies might include:

1. Ask suppliers to first send information electronically; you can decide whether or not you need a hard copy. (Supplier will save on paper costs.)

2. The following agreements regarding shipments from suppliers can save money for both you and your vendors.

- Wrapping, strapping and packing materials (boxes, filler, plastics) cost money, particularly if you have to pay to get rid of them, whether they get recycled or not. Set standard norms for the use of materials that can be easily recycled at your end. For example, ask them to use colour coding of materials if necessary to help identify materials for particular recycling procedures.
- Re-usable product containers or packing materials can be shipped back to suppliers.

3. Excessive product packaging for merchandising/marketing purposes can contribute significantly to purchasing costs. Ask vendors to help you achieve source reduction goals by reducing the amount of packaging on their products.

4. Vendor Catalogues: A catalogue weighing eight ounces will cost very little extra per copy to print on EP paper. Ask vendors to comply.

5. Set up incentives for paper suppliers to sell you less product, by helping keep track of your inventories and eliminating excess stockpiles, particularly custom stationary, forms, etc. that could become obsolete.

6. Provide inter-office EP envelopes to vendors for incoming invoices that need to go through more than one

There is often a tendency to adopt different standards regarding environmental practices when we are at work from when we are at home. People who dutifully make use of their domestic blue boxes somehow let things slide at work, especially when the company has no recycling system in place. Check out your company's recycling, paper use, and paper buying procedures tomorrow.

Vegetable-based (agri-based) inks

For large printing press jobs, the use of vegetable-based inks — such as soybean, linseed, corn, cottonseed, and canola — is much better than petroleum-based inks, for several reasons. First of all, petroleum is a non-renewable resource. Second, toxic metals are often used to make pigments in petroleum-based inks. Furthermore, printing with soy ink generates less paper waste during press runs (rejection rates are lower) and recycling processes (greater biodegradability).

Agri-based inks can perform just as well, if not better than, their more dangerous and environmentally-harmful petroleum counterparts. They are also priced competitively. Colour soy ink costs are very comparable, and while black soy ink can cost more than petroleum-based, this difference is usually offset because the same amount lasts longer.

Agri-based inks used to be commonplace until cheaper petroleum-based inks took over in the 1960s – but at a cost to the environment and workers. With the uncertainty of petroleum prices in the future, combined with the other advantages of agri-based inks, the time to switch is now. Make sure vegetable-based inks are used on all your print jobs, whether they are in-house or contracted to outside printers and publishers.

Agri-based inks are not available for ballpoint pens, laser printers or photocopier ink cartridges.

RESOURCES

ABPBC (Association of Book Publishers of BC) – *www.books.bc.ca/ecokit.php: eco-kit* for book publishers online.

Conservatree – *www.conservatree.com*: American non profit organization dedicated to converting paper markets to EP papers.

Magazine Paper Project – *www.ecopaperaction.org*: American non profit encouraging magazine publishers to switch to recycled paper.

MarketsInitiative – *www.oldgrowthfree.com*: A coalition of environmental organizations working directly with Canadian companies to develop practical and economic ways to shift their wood and paper use away from ancient and endangered forest products to ecologically sound alternatives.

Reach for Unbleached – *www.rfu.org*: Canadian registered charity working for a sustainable pulp and paper industry; also organizes an EP paper-buying club.

ReThink Paper – *www.rethinkpaper.org*: American non profit – more info, more resources.

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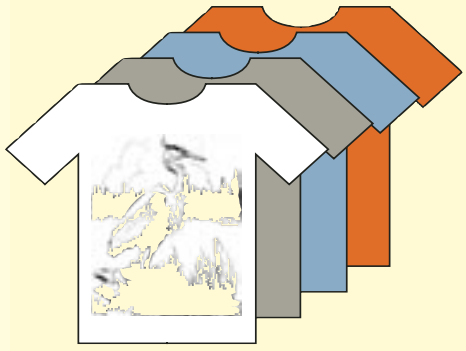

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