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Outfalls (left) such as this one at the north foot of Victoria Drive dump millions of gallons of sewage into the harbour; recycling is offered locally (above) but some countries have made even greater progress at reducing waste.

Waste: The bad . . . and the good

Our region's dirtiest secret lurks beneath the waves

By CHRISTIANNE WILHELMSON AND DAVID LANE

Beneath the waves of Burrard Inlet and Georgia Strait is our region's dirtiest secret. Every day, the Greater Vancouver Regional District is dumping hundreds of millions of litres of toxic sewage into our coastal waters. Our leaders know that this is irresponsible, but refuse to act.

Conservation groups have, therefore, turned to the courts for a solution — better sewage treatment — and at the end of this month, we will know whether the federal government will enforce its laws to stop this pollution.

What is sewage? More than human waste, it is a brew of disease-causing organisms, heavy metals and chemicals discharged by households and industry. Nitrates and ammonia threaten fish by limiting the amount of oxygen in their water. Mercury and copper contaminate the seabed. Hormone-mimicking chemicals, found in pharmaceuticals and cosmetics, harm the immune and reproductive systems of fish. PCBs increase in concentration as they move up the food chain, from bottom-dwelling invertebrates to mammals, including us.

Take Victoria, for example. Human health concerns have caused the provincial government to close hectares of shellfish grounds near the city's sewage outfalls. In 2006, an expert consultant hired by Victoria concluded that the seabed near these outfalls is contaminated enough to be declared a contaminated site.

Today, sewage treatment usually means secondary or tertiary treatment. Secondary treatment has been the minimum standard in Europe and the United States for years. It biologically removes roughly 90 percent of oxygen-depleting organic waste, and 90 percent of bioaccumulative chemicals and heavy metals, including

PCBs and hormone mimics. Other cutting-edge technologies, loosely labelled tertiary treatment, use oxidation to remove nitrogen and phosphorus. Innovative "resource recovery" methods also use sewage to create heat and bio-fuel (as Stephen Salter explains in the accompanying op-ed).

Seattle began implementing secondary treatment 15 years ago, completing upgrades in five years. Victoria now plans to have secondary treatment, by as soon as 2014.

Sadly, the Lower Mainland is way behind. Only three of GVRD's five sewage plants have secondary treatment, none have tertiary. The Lions Gate plant in West Vancouver and Iona plant in Richmond treat sewage at a mere primary level. Primary treatment screens out solids, but leaves behind in the liquid effluent organics, heavy metals and bioaccumulative chemicals.

Consider this: Every day, Iona dumps the equivalent of 221 Olympic-sized swimming pools of toxic sewage at the mouth of the Fraser River. A growing body of research suggests that this threatens the billion juvenile salmon that migrate annually through these waters. The GVRD acknowledges that primary treatment is inadequate. Its Liquid Waste Management Plan also requires Lions Gate and Iona to be upgraded to secondary.

In other words, everybody agrees: To protect Burrard Inlet and Georgia Strait, the GVRD must upgrade Lions Gate and Iona plants to secondary treatment.

Sadly, though, GVRD wants to postpone secondary treat-

ment for a long time: Upgrading Iona and Lions Gate in 2020 and 2030 respectively.

When GVRD proposed this Plan to the provincial government in 2001, federal officials expressed alarm. Fisheries and Oceans Canada staff warned that, under the Plan's flawed environmental monitoring, Lions Gate and Iona could kill millions of marine animals. Environment Canada inspectors sampled the two plants' sewage, warned GVRD that it was in violation of the Fisheries Act and threatened prosecution.

Victoria was aware of these concerns. Yet in 2002, it rubber-stamped GVRD's Plan. Since then the province and GVRD have thumbed their noses at Ottawa and conspired to pollute Burrard Inlet until 2030.

Five years later, Ottawa has yet to make good on its threat to take legal action against the GVRD. Conservation groups therefore launched two private prosecutions against GVRD and the province in 2006. Represented by Sierra Legal Defence Fund, investigator Douglas Chapman filed charges after hunting down evidence that Lions Gate and Iona effluent regularly fails monthly toxicity tests because it is acutely lethal to fish.

Provincial court judges have approved his charges and opened the door to trial. On May 31, Sierra Legal and Chapman will be back in court. The big question is: Will the federal government now help to prosecute these polluters — or will it shield the GVRD and the province by shutting down the prosecutions?

Christianne Wilhelmson is the Clean Air and Water Co-ordinator with the Georgia Strait Alliance. David Lane is the Executive Director of the T. Buck Suzuki Environmental Foundation.

Garbage can be seen as a resource in the wrong place

By STEPHEN SALTER

Economists and ecologists across Canada are locked in debate: How much pollution can the planet absorb? How much will Kyoto cost? I think we're asking the wrong questions.

City life can isolate us from nature's laws, so that we tend to see the environment as "out there" and separate from ourselves. We have the illusion of clean homes because we make the by-products of city life — sewage, garbage, carbon dioxide from our cars — go away, out of sight and out of mind. In nature however, there is no "away"; nature's cycles are closed, complete, and perfect.

What would life be like in a city built on nature's rules? In October 2006, I visited Sweden to learn how their cities convert waste to energy as one way of fighting air pollution and climate change. Officials from government, municipal energy companies, and waste facilities opened their doors and patiently answered my questions. I went searching for leading-edge technologies but discovered something more valuable: Cutting-edge common sense.

Picture this: A child in Stockholm carefully puts her orange peel into a separate container. Her parents pay less to dispose of this separated waste, which is delivered not to a landfill but to the sewage plant. There, it is co-treated with sewage sludge to produce enough biogas (methane from organic material) to run 50 local buses, a number which will reach 200 by 2010. Landfill pollution is prevented, air pollution is reduced, and because the carbon in organic waste comes from the atmosphere, the biogas does not contribute to climate change.

In Stockholm the combined cost of sewage treatment, garbage, and biofuels for transportation is reduced by this

simple, integrated approach. While the monthly cost of secondary treatment in Canada is \$10 per home, residents of Stockholm pay \$6 for advanced tertiary treatment because revenues from sales of heat and biogas help offset the treatment plant's costs.

In the smaller community of Kristianstad, biogas runs the community's transit and school buses, city trucks, taxis, and several hundred cars. Kristianstad encourages car owners to switch to biogas by subsidizing the conversion cost and providing free parking.

Swedish cities also recover

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energy from treated sewage with heat pumps, which in turn heat buildings through community energy systems. District heating sells for a flat rate (less than oil), which gives local energy companies an incentive to insulate subscribers' buildings. This leaves more energy in the network, allowing the company to take on more subscribers. In this simple arrangement the economic interests of the company and the environmental interests of the community are aligned. After heat is extracted from sewage by the way, the water is cold enough to run separate district cooling networks which provide air conditioning in offices — reducing energy use further still.

In Gothenburg, 1,000 people are employed providing renewable energy from local sources, including waste. Greenhouse gases are reduced and sustain-

able jobs are created.

People in Stockholm have an expression: Waste is a resource in the wrong place. While we ponder a nuclear future, heat pumps could recover enough energy from sewage to heat a third of our buildings. While we subsidize oil companies to dig for fossil fuel, we spend more public money to bury millions of tonnes of organic energy in landfills every year. If we made use of waste energy and materials as Sweden does, our cities could easily meet their Kyoto targets.

Canada and Sweden share cold climates, warm hearts, and a love of hockey. But on the score of fighting pollution with intelligence, Sweden leads six-one. Their genius is integrated planning, while we've fragmented our city governments into departmental silos and committees, obscuring the big picture. Our politicians struggle with issues of sewage, energy, climate change, transportation and waste separately, and the costs add up. It's unclear who profits from this arrangement, but taxpayers and the environment pay the price.

Senior government may set policy, but in the end we're the architects of our communities, and planet-saving changes will begin here. Vancouver is dithering over upgrades to secondary treatment for the Iona and Lions Gate plants. Victoria is drafting plans for sewage treatment, but it's too early to know if a truly integrated approach will be taken.

Today our cities have a unique opportunity, and we must urge our councilors to learn from Sweden's ecological ingenuity. We can't afford anything less.

Stephen Salter has a background in energy and the environment, and is a volunteer with the Georgia Strait Alliance and the T.Buck Suzuki Environmental Foundation.