

**“Much ado about nothing”: A Report
from the contaminated sites
“Front Lines”**

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I had first decided to entitle this story: “Much ado about nothing: A Report from the contaminated sites Front Lines”. However, given that the nature of the business seems to be the protection of earthworms – perhaps “A Report from the Trenches” is really a more appropriate turn of phrase.

At any rate, let me step out the trenches for a moment and begin this story about contaminated sites on a more personal note...as it was for me...an eight-year story of avoidance.

Let me explain.

This is a story that began for me back in the province of Saskatchewan around 1990 where I was an Assistant Deputy Minister in the Environment Ministry. Under a federal Government of Canada program called the Green Plan – in Canada a now well forgotten “throw your tax dollars off the back of a truck and hope something – anything happens” program – provinces were offered Government of Canada funds to start up a contaminated sites program.

In Saskatchewan, we respectively declined this ‘generous’ federal government offer because we thought we had more urgent environmental priorities to attend to.

Priorities that we knew would protect the environment and create both wealth and jobs.

Priorities like the establishment of a regulated container beverage program that not only had the highest return rate in North America at 92% but a program that also employed intellectually disabled individuals in over 70 beverage return depots across the province.

Unfortunately and unlike the Saskatchewan Ministry of Environment, the British Columbia Environment Ministry chose to accept the Government of Canada’s offer to establish a provincial contaminated sites program with the aid of their funding.

Upon coming to work for the Province of British Columbia in 1993, I therefore did my best to stay away from the work being done to establish a contaminated sites program in British Columbia by busying myself with more pressing things like the privatization of what remained of the BC Hazardous Waste Corporation – like the Green Plan, another failed environmental “flavor of the month”.

From 1993 to 1996 this involved in part, the establishment of the world’s first industry operated, environmental management system for household hazardous products including paint, pesticides, solvents, old gas and pharmaceuticals – a program which was implemented through the creation of BC’s first performance based, level economic playing field, environmental regulation.

So, I had helped fix one problem but in 1998 and now as an independent consultant with clients who were asking me for my help to deal with BC's new contaminated sites legislation – I found that there was no way for me to escape anymore – I had to deal with the issue of contaminated sites!

In this regard and as some of you well know, industry and those consultants who work for industry are by and large compliance driven – compliance that can be at times unnecessary, needless and costly!

And in the field of contaminated sites in Canada, unnecessary, needless and costly are three words that immediately “come to mind”.

But my story of personal failure to avoid staying away from contaminated sites is not the story that I am here to talk to you about today.

The story I would like to relate to you is a story which has three parts.

First, it is a story about putting land back to productive use for the socio-economic benefit of a local community.

Second, it is a story about the development of innovative remediation techniques and third, it is a story about spending lots of monies with no return on investment – dead weight loss monies – to get the job done – an unfortunate and unnecessary outcome of the outdated, labor intensive, prescriptive, command and control contaminated sites regulation that was enacted in British Columbia in 1996.

So let me begin this three part story with the local community where this contaminated site is located because first and foremost, this is a story about the people of Squamish, British Columbia.

From a geographical perspective, the town of Squamish is strategically situated at the head of the Squamish Valley half way between Vancouver and Whistler. It is also the last place before Whistler where there is ocean access.

The contaminated site in question is a 71 acre property located on a peninsula at the extreme south end of the town of Squamish surrounded by the waters of Howe Sound. It offers deep water moorage, rail, road and beach access with stunning ocean and mountain views.

So let me provide you with a quick scenic tour of Squamish.

INTRODUCE SLIDES

Today, Squamish is a community in transition – a community that has been deeply divided between those whose livelihood depends on the declining resource based economy of forestry and those whose livelihood depends on the increasingly important industry of tourism.

This is a story about their conflicting socio-economic needs and values.

A story about the conflict between those individuals in Squamish who wanted to see the contaminated site in question reused solely for industrial purposes and those who wanted a new mixed use for the land.

It is a story about how a community is now learning to overcome its opposing points of view and work cooperatively together to ensure the long-term sustainability of the entire community.

As such, it is an ongoing story about a community that is learning that a sustainable resource and a sustainable tourism industry do not need to be mutually exclusive objectives.

Indeed, like wealth creation and environmental protection they can go “hand-in-hand”.

It is a story about how this contaminated site is playing a central role in that transition.

To this end, on January 31st of 2004, the community of Squamish established a for-profit Waterfront Development Corporation with representation on the Board of Directors from the Town of Squamish and the Squamish First Nation. The Corporation’s land base is the 71 acre site in question and the adjacent lands on the peninsula.

The lands were owned by a BC Crown Corporation – BC Rail – and leased to a large Canadian Energy Company – my client – Nexen Inc for 50 years. Prior to the establishment of the local Corporation in January of 2004, Nexen gave up the lease for a government indemnity and the lands were then transferred by BC Rail to the Corporation.

The goal of the Corporation is to develop the Site and the adjacent lands to revitalize the economy of Squamish and to provide the people of Squamish with recreational access to their waterfront for the first time ever and ferry access to Vancouver – a trip that would take only 42 minutes.

This part of the story continues as I speak.

The story I am now about to tell you is a story within this story.

It is a story about how Nexen Inc. successfully cleaned up a mercury contaminated site - that was historically used for industrial purposes - to such an extent that it can now be redeveloped by the community of Squamish for mixed uses – for marine, commercial, residential, recreational and parkland purposes.

You should also understand, however, that this is just not a story about how Nexen - as a responsible corporate citizen cleaned up this site – it is a story about the many individuals working for Nexen who also contributed to the successful completion of this project.

There were over 35 key project individuals during the five-year life of this project and many more that played a supporting role.

So let me talk briefly about what the project team actually did to clean up this mercury contaminated site.

By way of background, let me begin with the plant that initially caused the pollution.

The chemical plant on the site was built in 1965 by the FMC Corporation on land leased from BC Rail. It was acquired by Nexen Inc. in 1987 and was closed down by Nexen in 1991 due to declining markets. It produced chlorine, caustic soda and hydrochloric acid for the local pulp mill industry.

The Plant used De-Nora chlor-alkali technology. However, mercury is not an ingredient in or a product of, the De-Nora process. Rather, it served as the negative terminal in the electrolytic cell.

Accordingly, it was during the production process that mercury escaped to the environment as air emissions, liquid effluent to Howe Sound or to the land through inadvertent spillage and the burial of process brine sludges. By far the greatest majority of contamination took place between the years 1965 and 1970 when there were few pollution controls. It is estimated that over 98 percent of the discharges to the ambient environment occurred during this time period.

With the Minimata incident in Japan controls were established by FMC in 1970.

The project team’s goal was to clean up the mercury contamination that remained on the site.

Since the science of cleaning up mercury contaminated sites is in its infancy, this is a story about having to develop new remediation techniques to clean up the mercury. Prior to 1998, some clean up work had been done - but a great deal of time was wasted while Nexen attempted to find the “magic bullet” to remediate on site all the types of mercury contaminated soils and sludges.

The project team that came together in 1998 recognized, however, that to ensure the successful remediation of this site, a combination of different technologies would be required. And that any technology chosen must not only gain regulatory approval but must be financially and technically feasible. So the challenge for the new project team was to find...or develop...environmentally benign technologies that were appropriate to local conditions.

In 1998, we investigated ten different technologies for the clean up of mercury contaminated soils, sludges and ground water. Two of them, gravity separation / soil washing and fixation / stabilization were chosen for further examination, including pilot studies both in the lab and on the site. They were then used on this site to successfully treat soils and sludges.

In addition, the project team also developed water treatment technology to remove mercury from the water used by these two technologies and from the contaminated groundwater on site. As a result, two new environmental technology companies have been spun-off from the project.

The actual clean up on this site took five years – from 1999 to 2003.

So what did we actually do?

During our five summer campaigns we removed and sent off for recycling all the plant process structures.

We removed all the mercury contaminated man-made sludge on the Plant site. The sludges were stabilized on site and then transported by rail to a secure landfill in the province of Alberta.

We removed and treated through soil washing all mercury contaminated soils to commercial and where practical, residential standard above a semi-impervious soil layer that is approximately 3 to 5 meters below grade.

Finally, we backfilled all excavated areas with imported clean fill.

The remaining mercury contaminated soils and groundwater below the semi-impervious soil layer – again approximately 3 to 5 meters below grade – is now isolated from the receiving environment. The one exception is a small groundwater plume that “daylights” on the foreshore of the Site. The area was approximately 15 by 50 meters prior to the removal of contaminated sludges and soils from the Site.

As well, and prior to the removal of the contaminated sludges and soils from the Site, Nexen conducted extensive empirical, scientific studies of this area and determined that the risk to the environment was low – but more on this point later.

To give you some sense of the size of the project, we excavated 3 hundred thousand tonnes of material of which 24 thousand tonnes was used as backfill after cleaning.

10 thousand tonnes of sludge was stabilized on site for off-site disposal.

We backfilled 4 hundred thousand tonnes or to put it another way, 20 thousand truckloads of backfill.

We sent 150 thousand tonnes of sludges and soils for off-site disposal or again to put it another way, 1 thousand 700 rail cars containing an estimated 50 tons of mercury.

And finally, we handled 3 million tonnes of material and in the process recovered 3 tones of elemental mercury.

We did this on time and on budget but most importantly, we had a perfect safety record.

Oh yes – and we did spend approximately 45 million dollars over the five-year life of the project to get the job done.

So as you can see, this is a three part story.

First, it is about putting land back to productive use for the socio-economic benefit of the local community.

Second, it is a story about the development of innovative remediation techniques and finally it is a story about spending lots of dead weight loss money to get the job done.

But it is not a story about protecting human health or the environment and that is why it was much ado about nothing.

But you might ask: how can this be?

As I indicated previously, prior to the removal of the contaminated sludges and soils from the Site, Nexen conducted extensive empirical, scientific studies around the site and determined that there was no risk to human health and that the risk to the environment was low. But even prior to these studies many scientific studies had been undertaken on and near the site during the 1970's and 1980's that indicated that there was no risk to the environment shortly after 1970 when pollution controls were first installed by FMC.

In a 1997 Norecol Dames and Moore Report on these historical studies it was noted for example that the Levings and McDaniel studies undertaken in the 1970's and 1980's - and here I am quoting "...suggest that the Squamish estuary contains a normal estuarine invertebrate community rather than the depauperate fauna that might be expected in an area of toxic sediments. In fact, Standhope and Levings (1985) observed that population densities of *E. confervicoulus* – up to 14,000 per square meter – were an order of magnitude higher than most intertidal amphipod densities reported in the literature." – end of quote.

From an environmental perspective, it is clear that the process of natural attenuation – that is, the environment's ability to heal itself – in this very dynamic estuary environment had in the past – and continues today – to reduce the mercury halo around the site – and our most recent studies only confirmed this fact.

In fact, our last estimate is that the site is discharging less than 1 gram a day to Upper Howe Sound through groundwater. To put this into context, we also estimate that the Squamish River is discharging from natural sources approximately 10 grams a day to Upper Howe Sound. This, of course, does not include mercury entering the Squamish River from man made non-point sources like the mercury from dental offices.

So if the site was not causing "pollution" since 1970 as defined by the provincial *Waste Management Act* why did the BC Environment Ministry in 1999 issue an incredibly prescriptive "dig and dump" "pump and treat" Order to Nexen AFTER Nexen had already begun to clean up the site on its own accord?

To answer this question, you must look to the history of environmental regulation in the province of British Columbia, to its labor intensive, prescriptive Contaminated Sites regulation and to the "command and control" culture in Canada's environmental regulatory agencies.

Time does not permit me a detailed discussion of this issue so let me briefly make but a few points.

First, it is my understanding that the US Environmental Protection Agency has rated contaminated sites as 99th on their list of 100 environment priorities – that this issue is not at all a significant environmental priority. This has also been my experience after working on numerous sites over the past eight years – that it is simply a "minor league" point source problem. As many of you know, the real issue today – the real concern – is non-point-source pollution.

So why all the fuss over contaminated sites?

Clearly, the regulation of contaminated sites was a natural progression from the environmental ministries traditional role of permitting large industrial sites – an environmental management system that was first established in BC in the early 1970's.

Simply put, it was something they felt comfortable doing.

However, the creators of the new contaminated sites environmental management system did not consider how this new system would fit into the older system for managing large industrial sites. As such, the definition of what constitutes a contaminated site – in the BC contaminated sites regulation – is far too broad in its application.

As such, it is now being applied to large operating industrial sites and the result is that it now distorts environmental management decisions at these sites. It forces companies to focus on “dead weight loss” pollution control solutions and not prevention. Simply put, it puts the “cart before the horse” and prevents companies from properly prioritizing their actions including the ability to focus on pollution prevention and wealth creation – to focus first on turning off the taps before trying to clean up the mess.

But equally important, the new contaminated sites environmental management system is also a continuation of the old labor intensive, prescriptive, command and control management system for large industrial sites.

To be blunt, the creators of this new system based it on a culture that they were comfortable with and as such, they did not understand that they could have implemented a performance based system – a system that is not labor intensive – a system that simply sets out goals and then acknowledges and rewards responsible corporate behavior for achieving those goals – a system that puts the carrot before the stick.

As well, and unlike engineers when building a new structure, they did not build a pilot plant...let alone bench scale it. As such, there are no policies or procedures to deal with such critical issues as risk assessment, natural attenuation or point of compliance. As such, there is little order or discipline in the current regulatory system and therefore, no certainty or consistency for business – the two things that matter most to business.

Worst still, they imported an American legal model which has resulted in an extremely litigious contaminated sites system in BC. It is my understanding that the American act CERCLA or more commonly know as the Superfund statute is also known colloquially in the United States as the welfare and release act for lawyers – and the same can be said about BC. As an aside, it was once estimated that 80% of “Super Fund” expenditures were eaten up in legal and consulting fees.

And because they did not understand the role and responsibilities of the environmental regulator, they created a system that is far too intrusive into the affairs of business. For example, it is not the job of the environmental regulator to determine who is a responsible person for causing pollution – that is something for the courts to decide!

And because they instituted a “fee for service” in the regulation at \$150 dollars per hour and specific dollar amounts for their review of large regulatory documents, they have also put those that now regulate the system in a constant potential conflict of interest. In effect, they have devalued the critically important role that the environmental regulator plays in our society as the protector of the public good.

Under this system, one could now argue that we simply have a system of contaminated sites bookkeepers and tax collectors – a system that impedes new investment and wealth creation in British Columbia and a system that has created an contaminated sites industry that has been estimated to cost us _ billion dollars a year in dead weight loss monies.

And here let me remind you what Jane Jacobs said about this matter in her book *Systems of Survival*. She noted that the underlying ethics of merchants and guardians work well in their own spheres, but they don’t mix very well. When the guardians – as society’s enforcers or, those that administer public trusts adopt the profit-oriented ethics of the market she says – that the result is the Mafia – a Mafia that in this case also engenders a likeminded Mafia of private sector environmental consultants who also feed off the contaminated sites regulatory system in BC.

But finally and most importantly, in creating the contaminated sites regulatory system in BC to ensure their continued employment – or as it is called in China – their “iron rice bowl”, they have set aside their primary reason for existence which is, of course, the protection of the ambient environment.

Instead of putting in place an empirical, scientifically verifiable framework for the protection of the environment that would only be triggered if the ambient environment was at risk, they borrowed numeric standards from places like Holland and the State of Massachusetts – the end result being that we had enforceable soil standards in BC that were so strict that they were at times below the natural background levels found in the predominantly volcanic soils of BC.

So the risk here is not to the environment or human health – rather the risk is to those businesses that are forced to deal with the capricious, wasteful, costly and time consuming nature of the environmental regulatory system for contaminated sites established in the Province of British Columbia by both orders of government.

But who is ultimately responsible for this sad state of affairs?

Should we ask those politicians whose civil servants created this system to accept responsibility for the current state of affairs in British Columbia?

After all, it is a very technically complex field of study requiring a familiarity of numerous fields of study – and I might add – intentionally made more so by the regulators who are responsible for the contaminated sites program in BC.

Let me respond to my own question by quoting a former Canadian Prime Minister, Robert Borden who stated in our House of Commons nearly a century ago that it is the Minister who must accept responsibility for the actions of his Department and I quote, “...for the minutest details of his department; he is politically responsible, even if he does not know anything at all about them”.

So it is my hope is that the three Ministers in Canada who’s Ministries claim jurisdictional responsibility for contaminated sites in BC will now finally take responsibility – their responsibility – to fix this current state of affairs – this significant impediment to investment and wealth creation in the Province in which I reside.

As I began this presentation – let me now end it on a personal note.

When I first started consulting in the private sector after privatizing my own government job people would always ask me what it is that I do. After all, they generally understood what an environmental engineer did or what an aquatic ecologist did but an environmental management consultant was clearly something new.

As such, I decided that it would be best to explain what I do on the back of my business card.

So I put on the back of my card the following statement.

“Facilitate positive change to the mutual benefit of the environment; the profitability of your organization; and your organization’s employees and the communities in which they live.”

After getting involved in the field of contaminated sites, I realized that the statement no longer “rung true” – that I had to change the statement – that it was not positive “change” that I was attempting to facilitate but rather positive “outcomes” because as I had learnt in my time dealing with the issue of contaminated sites – sometimes in order to protect the environment, it is best to do nothing – a counter intuitive statement if there ever was one!

Which brings me to a final albeit rhetorical question for you – which has to do with the critical issue of correctly prioritizing environmental activities to make a positive change to the state of our environment – for when you think about it contaminated sites are a legacy – a legacy of ignorance from our past – but they are done – so should we not set in place an environmental management system for contaminated sites that recognizes this reality – that does not nearly devote so much time, energy and money to it – and instead focus our limited time, energy and money on things we are doing right now that have a negative impact on the environment.

Should we not focus on today's new realities – today's present problems – like non point source pollution and in so doing continue to demonstrate through the principle of pollution prevention that wealth creation and environmental protection are not mutually exclusive objectives – indeed that they go “hand-in-hand”.

Thank you.