

31 October 2006

To: The Special Committee on Sustainable Aquaculture

From: Vivian Krause

RE: Risk Communication for Sustainable Aquaculture

Background

I am a resident of the City of North Vancouver. I lived also lived in Kitimat and in Kamloops. I have a B.Sc. and a M.Sc., both in Nutrition, from McGill University and the Université de Montréal, respectively.

The Committee may wish to make allowances for the fact that I have worked in the salmon aquaculture industry and that my experience certainly has influenced my views.

I worked with the United Nations in Central America and Asia from 1990 to 2001 and in January of 2002, I took a position with NUTRECO Holding N.V., responsible for Corporate Development for North America. At the time, NUTRECO was the largest aquaculture company in the world. Among my responsibilities, I handled media relations and served as a spokesperson for the salmon farming industry on both the east and west costs of Canada and from Alaska to California. I also worked briefly in both Chile and Norway and spent numerous days at the farms in both of those countries and in B.C.. I worked for NUTRECO until 13 October 2003. The Vancouver office closed and the corporate North America office moved to Fort Lauderdale, Florida.

Unlike most British Columbians, I have had the opportunity to see first- hand what goes on at the fish farms. Unfamiliarity breeds fear, and since I am not unfamiliar with salmon farming, naturally I am less leery of it than someone who has never been to a salmon farm. Moreover, I have benefited from the industry in that it provided my livelihood at one point; since I have benefited from the industry I am prone to a more positive view of it than the people who haven't.

I have prepared this submission independently as a citizen of British Columbia.

Scope

Regarding the oral submissions that have been made to the Committee, as documented in Issues 7 -10 and Issues 16 - 19 of the Hansard proceedings, I write to comment on the comments.

I have restricted my comments to salmon aquaculture as that is what I am familiar with. Some of the concepts that I mention are relevant to shellfish aquaculture as well. The .pdf files for the subsequent sessions in were not available by the 31 October 2006 deadline for submissions to the Committee.

Most of what the Committee has heard so far has been about one of two things: 1) Environmental and food safety issues, and 2) Community outrage.

As I have experience in communication and stakeholder relations, I submit that the Committee consider a recommendation to the Legislature to include Risk Communication as part of the framework for Sustainable Aquaculture in British Columbia.

It would be easy to misinterpret the essence of what I am saying as, "she thinks that the controversy over salmon farming is just because of bad 'P.R.'". I therefore will go out of my way to clarify that I do not dumb-down the controversy over salmon farming as if it is merely a case of bad 'P.R.'; its more than that.

When one works in communication, whether for government or industry, part of the job is to explain the government or the company to the public. The other part (and usually the more difficult one), is explaining the public to the company (or to the government). It is in this later vein that I offer this submission.

Most of the concepts which I mention here are neither mine nor new. Much of what I submit to the Committee comes from the work of Dr. Peter Sandman. While there are many risk communication experts in both Canada and the U.S., I found that Dr. Sandman's work is particularly comprehensive and accessible.

I have not worked with Dr. Sandman, nor have I even spoken with him but from reading his papers it strikes me that Dr. Sandman might be a helpful consultant to the Committee as you formulate your recommendations to the Legislature.

In particular, I would recommend Dr. Peter Sandman's paper entitled, **"Because People are Concerned: How Should Public "Outrage" Affect Application of the Precautionary Principle?"**. The paper was written in relation to mobile telecommunications but many of the concepts and questions raised are pertinent to aquaculture - particularly the question of whether to require closed containment technology. This paper and others by Dr. Peter Sandman are available at www.psandman.com.

Though not the main point of my remarks, I will mention that as I read through the Hansard transcripts, I noticed many instances in which the information presented to the Committee was out-dated, incomplete or incorrect. I have attached a list of these instances and have also sent a copy to Mary Ellen Walling of the BC Salmon Farmers Association so that she may offer her comments if she hasn't already done so.

The questions in the back of my mind:

As I prepared this submission, I asked myself, how will we look back on the work of this Committee, 10, 20 and 30 years from now? Will we look back and say to ourselves, "Gee, salmon farming was an Exxon Valdez waiting to happen! Why didn't they see it coming?" Or "maybe its okay in Europe where the wild Atlantic salmon are all but extinct and the few remaining Atlantic smolts are huge compared to the pinks and chum smolts, and maybe its okay in Chile where there are no native salmon - but not here in British Columbia!"

Will we look back at sea lice someday as the marine equivalent of the pine beetle? Are we today with sea lice where we were with the pine beetle in the 1980s? This is a very difficult call to have to make.

Or are those butt ugly little sea lice the marine equivalent of the mosquito - the most deadly creature on earth, responsible for millions of deaths every year because of malaria? What if the sea louse transmits a virus as the mosquito transmits the malarial virus? What if scientists just haven't discovered this yet and what if that virus is even more harmful than the sea louse itself?

The responsibilities of this Committee are huge as the consequences of environmental leadership will halo or haunt us for a very long time.

My Concerns:

- Wild salmon are sacred. It is imperative that we protect them, their marine environment and the many other less celebrated species as well.
- Everyone needs a sustainable means to earn a living and along with it the sense of self-confidence and pride that comes from doing a worthwhile job. People also need employment opportunities to set an example for their children of what it means to be a responsible member of our society.
- I do not want any of the First Nations people with whom we share British Columbia to feel obliged to use the 2010 Olympics as a platform to get due attention to their concerns.
- I want us here in British Columbia to be able to sort out our conflicts amongst ourselves. While I don't begrudge them for having done it, I do not want First Nations people to feel the need to ask the King of Norway to get involved.
- I want British Columbia to be known not for having controversies over our natural resources but for resolving them in a sustainable and exemplar fashion. If we can't, how can we expect less privileged countries to do so?

Valid Concerns

The Committee has heard about the sea lice research findings of Alexandra Morton and her colleagues:

- Virtually no sea lice were found near Prince Rupert, Rivers Inlet and Smith Inlet. Only very few sea lice near the salmon farms in Bella Bella but many sea lice were found in the Broughton Archipelago.
- One louse per gram of fish is probably fatal; therefore a 0.35g pink or chum smolt probably can't survive even one louse.
- A 42-fold increase in lice was found on juvenile salmon near a farm.
- Elevated sea lice levels were not found until the smolts got near the farms. Elevated levels of sea lice were found for 35 km past the farms.

The Committee has heard about other environmental concerns: escapes, benthic impacts, and the transfer of disease between farm and wild fish.

The Committee has also heard from a number of people about far-field effects, 'bay-wide ecosystem effects" a Marty Weinstein referred to them. As Chief Bill Cranmer put it, "the damage that's done at a particular site doesn't just stay there. It gets dispersed, depending on the tides." (pg. 357).

The Committee has heard frustration that there is no comprehensive program to manage the far-field effects and that as Marty Weinstein put it, "officials are deaf to anything other than site-specific issues." (pg. 372). On the other hand, you also heard from government officials that far field effects are covered in the siting criteria.

You heard concern over the "Environmental Banking" system. "Its not fair to rehabilitate a marine environment far removed from the territory where the fish farms are damaging," Bill Cranmer told you. (pg. 358).

The Committee has also heard about how some First Nations are feeling overloaded by matters related to the controversy over fish farming, and how this is draining their resources away from attending to other matters. Chief Bill Cranmer said that 80% of the efforts of his tribal council are related to salmon farming and the frustrations that they have with it.

The Committee has also heard about kudoa in chum salmon. Nick Orton told you that he has seen an increase from three to five fish per year, to five to 10 fish per 100, and now its up to 10 to 15 per cent of his fish. And apparently DFO has told him that there's the same problem in the sockeye in Barkley Sound.

You have also heard concerns over foreign ownership and questions about the potential implications of one foreign-owned company owning more than 50 percent of the farms.

The Committee also heard from Noel Lax that "the tranquillity for sailors and kayaks is impacted by the sound of diesel generators which may be heard a whole days paddling distance away." (pg. 224). When I read his remarks it dawned on me that an issue that has not yet been considered is the potential noise pollution that would result if "closed containment" technology were used.

These and other concerns are valid.

What I am surprised that the Committee does not appear to have hear about yet are some of the alternative approaches and technologies other than the so-called "closed containment": 1) What about off-shore systems? 2) What about rearing smolts for a longer period in the land-based, fresh-water hatcheries?

What the Committee hasn't heard about salmon farming

Most of what the industry has presented to the Committee in its oral submissions has been about the economic benefits of salmon farming.

It is unfortunate that the industry hasn't yet said more about the environmental hazards of salmon farming and how they are mitigated.

It is quite difficult to persuade the public that you are working hard to mitigate an environmental hazard at the same time that you are saying that "the risk is low", or that it is a "phantom issue", or a myth, or that you don't talk about it at all.

I presume that you have picked up on many of the industry's hazard mitigation measures during your visits to farm sites. As you know, however, you can't possibly get a sense of the whole farming cycle by visiting a farm on only one occasion. Other moments in the production cycle that would be relevant to observe are the water quality and plankton testing (especially in the summer), the use of tarps and air compressors to maintain oxygen levels, fish health checks by the veterinarian and the fish health technicians, the changing of the nets, ponding the smolts, grading, harvesting, and the spawning of the broodstock.

I would encourage the Committee to probe further and get the industry to describe the actual environmental hazards and the specific measures that companies take to mitigate those hazards. I hope that the Committee will have the opportunity to talk directly with people who actually work at the farms on a day-to-day basis and to learn from them what they do daily, weekly, monthly and so on, in order to prevent escapes, to prevent benthic impacts, and to prevent disease, both in terms of proximal and far-field effects.

That there are environmental hazards associated with salmon farming is not something that the government or the industry should be reticent to state. It's the adequacy of the mitigation that's the real issue, not whether the risks are high or low.

The trouble is however, that the average person won't bother to get that informed. Instead of getting a technical understanding of the background issues, most people rely on a surrogate for technical knowledge of issues on which they nonetheless have quite strongly held opinions: trust.

Certification: A Top Priority of Sustainable Aquaculture

"When trust is lost, the initial goal is not to get it back but to live without it," advises Dr. Peter Sandman. "The paradox of trust is that it grows better when it isn't asked for. Trying to earn the public trust back is the wrong initial goal. When trust is lost, accountability becomes the stand-in for trust." Certification programs are one of the ways that an industry can demonstrate accountability.

More important than educating the public about salmon farming, getting everyone out on a farm tour, "giving the public the facts" (as was my slogan in my day), a top priority for Sustainable Aquaculture should now be third party certification.

But environmental issues are just the tip of the iceberg

Proper treatment of the issues requires an adequate diagnosis to begin with. To see the controversy over salmon farming as one of environmental and food safety issues is to make an incomplete and misleading diagnosis.

Environmental issues - sea lice included, are real and addressing the environmental and food safety issues is necessary - but not sufficient.

Environmental issues are the tip of the iceberg which is community and stakeholder relations. When you keep treating people badly, eventually you get sent to the Principal's Office. Whether aquaculture will be a flagship or a Titanic in British Columbia (and globally), will depend on whether we see just the tip or whether we see the iceberg for what it really is, and respond accordingly.

Risk Communication: The "Missing Piece"

The "missing piece" to understanding and resolving the controversy over salmon farming, and the keystone to a future for Sustainable Aquaculture in British Columbia is giving due priority to community and stakeholder relationships - beginning with effective Risk Communication.

Once you take a look at how the controversy over salmon farming has been mishandled from a Risk Communications perspective, you begin to see that there is much more to the controversy than initially meets the eye - and a lot more to it than environmental issues.

What is Risk Communication?

Risk Communication is a science-based approach for communicating effectively in high concern, emotionally charged, controversial situations. Effective risk communication can help people to keep their sense of risk more in proportion to the hazards at hand.

Risk communication isn't just explaining things better, "telling your story", "giving the public the facts" or setting the record straight.

"The ultimate job of risk communication is to try to produce a citizenry that has the knowledge, the power, and the will to assess its own risks rationally, decide which ones it wants to tolerate and which ones it wants to reduce or eliminate, and act accordingly.¹"

It is beyond the scope of these comments to go into detail on the principles and practices of Risk Communication but to give you a taste of it I will mention one point about reassurance and over-reassurance.

When people are concerned, the natural tendency is to want to reassure them. The more concerned people are, the more a government or an industry wants to reassure. When reassurance gets over-done, however, it backfires. Over-reassurance makes people sceptical. Scepticism obscures reality, people become suspicious and then public confidence tanks.

A government and an industry that talks openly about its problems, how it is solving them, what it knows *and what it doesn't know*, and that involves affected communities in devising locally-acceptable solutions, such a government is likely to inspire a lot more public confidence than a government that over-reassures.

What bothers many people about salmon farming *isn't* that there are environmental hazards that go along with it. The public accepts that every industry has associated risks. What the public expects is that an industry is only allowed if the risks that it poses are acceptable and if so, that those risks are acknowledged and appropriately mitigated. By constantly saying that "the risks are low", the government and the industry give the impression that both are down-playing, trivializing or ignoring the risks and also, the people who call attention to them. Naturally, this does not engender public confidence.

The irony here, and it's a very sad and costly one, is that the salmon farming industry really does attempt to mitigate environmental hazards and does a good job in many respects. And in others, perhaps there's room for improvement.

¹ Sandman, P. 1993. Responding to community outrage: strategies for effective risk communication. AIHA Press.

Towards Risk Communication for Sustainable Aquaculture, a first step would be an evaluation of how government communication has affected the trajectory of the salmon farming controversy and public confidence (and the loss thereof) in government management of our irreplaceable ocean resources. My guess is that you'd find that government communication has not abated but rather, has exacerbated the controversy because of a lack of consistent, effective Risk Communication.

Quite apart from the task of Risk Communication, obviously there is also the on-going need to address environmental issues per se. There is a need to do both: address the environmental issues and address Outrage as well. And as Dr. Peter Sandman advises, "Hazard solutions for hazards and outrage solutions for Outrage."

While the controversy over salmon farming is not just a Communications problem, ineffective risk communication is one of *multiple* factors that has contributed to aquaculture-related conflicts. And perhaps, effective risk communication is more important than has been understood thus far.

It is not be shameful to admit a way in which things could be done better, a shortcoming, an over-sight, or an inadequacy. What is shameful is to ignore it and do nothing about it.

Respectfully,

Vivian Krause