HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Environment and Sustainable Development

ENVI • NUMBER 023 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Tuesday, June 14, 2016

Chair

Mrs. Deborah Schulte

Standing Committee on Environment and Sustainable Development

Tuesday, June 14, 2016

● (1100)

[*English*]

The Chair (Mrs. Deborah Schulte (King—Vaughan, Lib.)): Good morning, everyone and welcome. We don't have everybody here, but we have enough to get the meeting started, and the rest will join us shortly.

We have some excellent groups with us today.

We have Philip Jessop by video conference. He's a professor from the department of chemistry at Queen's University.

We have Todd Beasley, founder, technology co-inventor, and chief operating officer at Canadian Chemical Reclaiming Technologies Ltd.

We have Michael Burt, the corporate director, regulatory and government affairs, at Dow Chemical Canada Inc.

Finally, we have Kerry Doyle, president, and Chris Bush, operations manager, at KPD Consulting Ltd.

Welcome to all.

We usually start with the video conference just in case we lose it. We want to ensure that doesn't happen.

I'm going to let you know a little bit about the process here to try and help. You have 10 minutes to make your statement. When you have one minute to go, I will put up a yellow card to let you know that time is running out. Once the red card goes up, you're passed your time. I don't want you to stop mid-sentence, but just finish your sentence and wrap it up. If all of you could follow that, that would be fantastic.

We'll begin with Philip Jessop. Dr. Jessop, over to you.

Dr. Philip Jessop (Professor, Department of Chemistry, Queen's University, As an Individual): Thank you.

Just to let you know my background, I'm a professor of green chemistry. My research at Queen's involves waste carbon dioxide and finding uses for waste carbon dioxide in making industrial processes greener, more efficient, and less expensive.

My role at GreenCentre Canada is as a consultant and technical director. I help them assess new technologies being sent to GreenCentre, and evaluate them in terms of technical aspects, green chemistry, and the development work that's needed to get them to be commercializable.

I'm an expert on green chemistry. I am, unfortunately, not an expert on regulations. I hope you won't be too tough with your questions on the regulatory aspects.

If you could put my slides up or perhaps you have the slides in front of you.

The Chair: Yes, we have. We're going to get them up momentarily.

Dr. Philip Jessop: Let's look at the second slide.

I want to make sure we're all on the same page in terms of what the meaning is of the words “green chemistry”.

Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances. The important word here is “reduce”, because it makes it a comparison. Green chemistry is not an absolute. Nothing is absolutely green in any way at all; it's always a comparison. Green, as an adjective, means “less hazardous than what was used before”, and therefore, it must be a comparison between two or more things. You cannot have a single object that is green. This is a source of a lot of misunderstanding with the public and even in scientific papers where they claim that something is green. Sometimes it's misleading because they have not done a valid comparison.

Green chemistry differs from pollution control and also from pollution prevention because green chemistry emphasizes design or redesign to avoid the use or generation of hazardous substances, rather than emphasizing a mechanical means to collect pollutants before they leave the factory. We'd rather not have the pollutants generated in the first place.

I have four suggestions on how to foster innovation in green chemistry, and I'd like to talk about each of those four during my 10 minutes.

First, we have the idea of strengthening the funding programs that are most successful at leading to new technologies in the area of green chemistry and innovative new technologies. In my mind, this has been for a long time the discovery grants program within NSERC. It has been responsible for most of the new ideas being generated at chemistry and chemical engineering departments across Canada.

The other programs at NSERC are valuable for taking those technologies further, but it's the discovery grants system that funds the initial discoveries. This is something I've seen and something that GreenCentre Canada has seen across the country. The discovery grants system is crucial to continuing innovation in the area of green chemistry in Canada.

It's crucial because if professors have only a grant, and this is the one they have, it's a flexible program. I used to be a researcher at the University of California, Davis, where I was a professor. The American funding system is inferior, in my opinion, because they don't have an equivalent program to the discovery grants. Discovery grants are flexible. If you find something that's better or greener than what you originally proposed, then you are allowed in Canada to pursue that, whereas in the U.S. you would be prevented from doing so.

Second is the need to build a better commercialization pathway. Professors like myself, or others across Canada, who find a new and green technology due to their research often have a difficult time getting it commercialized. Even though Canada is, in my opinion, world leading in the area of green chemistry research, we're not world leading in terms of commercialization, and this is not restricted to green chemistry.

The problem is the method by which we commercialize the technologies. For example, if an academic professor in chemistry has invented a new technology, we cannot only have that discovery, we can prove it works in a beaker on a bench, and we can make grams of sample. I've had this experience several times. One time I invented a new surfactant, and companies called me and said, “This is wonderful, we think this is great. We want to commercialize this, and license this technology. Can you give us 15 kilograms of sample, and can you tell us it's going to work on our oil field?” I said, “I can make you 15 grams, but I have no ability to make kilograms, and I have no idea about your oil field”. Then they walk away after saying, “Call us back when it's ready”. This is an example of what happens. There is a gap between what the professors are able to do and what industry is hoping to have before they're willing to run with the technology. There is a lot of de-risking, scale up, and further optimization that needs to happen before these technologies can find ready uptake in industry.

The next slide shows the reason I worked with Rui Resendes, who was a tech transfer officer at Queen's, to create a new entity called GreenCentre Canada, which did receive CECR funding from the federal government.

● (1105)

This is a centre for doing that middle work, that work that's required to take it from the point up to which professors can and do that middle scale-up, de-risking, optimization for industrial applications, intellectual property protection, and negotiations with industry, all that middle work that is difficult for professors to do. We have labs in Kingston. We have a scale-up facility in Mississauga. This is one model, but certainly not the only model that one can have to make a better pathway to get green technologies commercialized.

If you go to the next slide, I would like to talk briefly about barriers to commercialization of new technologies. It's not just the commercialization gap that's slowing down the commercialization of green chemistry technologies; there are other problems. For example, suppose someone has invented a new surfactant that's far more powerful. For those of you who are not chemists, a surfactant is a compound that will help oil and water mix and is very useful in many formulations such as shampoos and soaps. Suppose someone has invented a new surfactant which is much more powerful than an old surfactant. Let's call this new surfactant A. It is twice as damaging to the environment and health as the old surfactant B, but it is so powerful that you only need to use one-tenth of the amount to get your shampoo or formulation to work.

Overall, the shampoo is five times less damaging to the environment and health using this new surfactant than using an old one, but with regulations and guidelines in the U.S., and I expect in Canada as well—and I hope you're more familiar with these than I am—the problem is that they're often based upon the compounds and not the formulation. A compound such as surfactant A would be less likely to be approved because it is more damaging per gram than the old surfactants, or maybe more damaging compared to some kind of a threshold cut-off. The fact that the amount needed is far lower is not necessarily taken into account in the regulations.

How do you solve this? I think you solve it by using performance-based regulations, where you take into account the amount used, so something that is slightly more damaging per gram but is far more effective and less is needed would be taken into account. Therefore, if we want toxicity reduction, we shouldn't regulate how that toxicity reduction or environmental harm reduction is achieved, but rather regulate the outcome. The shampoo or whatever should be less damaging to the environment rather than the individual compounds.

It's the same for technologies. We could regulate. Instead of saying that you must use technology A, say rather, “We want you to meet performance measure A.” Then different ways of achieving that performance and that harm reduction can be considered by industry.

If you go to the next slide, there is another scenario that can inhibit the adoption of new technologies. Regulations that require certification of new chemicals or technologies, such as the one that you guys are currently reviewing, can make it risky and expensive for industry to adopt greener chemicals. For example, if industry for some application could use chemical A, which is more damaging to health and the environment, but is already certified and has already gone through that process, or chemical B which is believed to be much less damaging to health and the environment but is not yet certified, then industry will be more tempted to go with chemical A despite the benefits of chemical B, because the extra cost and extra risk of obtaining the certification is a barrier and a disincentive to adopt a greener technology. How do you solve this? We have to incentivize industrial partners to participate in the de-risking of the newer chemicals and the newer technologies.

GreenCentre does help with the optimization and early scale-up, but it is certainly not funded well enough to handle more than one pilot project at one time, because the pilot plant development is too expensive, so GreenCentre is not big enough to do more than one at a time.

NSERC funds development work, but the funding tends to fade out once you get to pilot stage or beyond. In my opinion and that of other people at GreenCentre, the development process and the funding for it is weakest at the pilot and post-pilot stage, where the extra expense and the extra risk of new technologies versus older compounds or technologies intimidates—

● (1110)

The Chair: I hate to do this, but I'm going to have to cut in. You are already over a minute over, so could you just wrap it up within a few seconds. I'm going to have to move on. I'm so sorry as there's a lot of good information.

Dr. Philip Jessop: SDTC helps, but we need to have more incentives for industrial partners to participate.

Point four is risk migration. This is when we ban something and have something else which is more damaging take its place. This can be avoided by doing life-cycle analysis of new technologies, which should be encouraged in regulations.

Thank you very much.

● (1115)

The Chair: Thank you very much and I really do apologize for having to cut you off. You have the information here and I'm sure some more will come out in questioning.

We're going to move to Mr. Michael Burt.

Mr. Michael Burt (Corporate Director, Regulatory and Government Affairs, Dow Chemical Canada Inc.): I want to thank the committee members for giving me the opportunity to speak on behalf of Dow Canada. I'd like to begin by letting the members know a little bit about the company which I represent here today.

The Dow Chemical Company is a 119-year-old global company which is a market-driven, industry-leading specialty chemical, advanced materials, agro sciences and plastics company which delivers a broad range of technical-based products and solutions.

We are the second largest chemical company in the world by sales. We operate in 179 sites in over 35 counties. Our global workforce is approximately 55,000 individuals with global revenue exceeding $50 billion annually. Our global headquarters are in Midland, Michigan, and Calgary, Alberta, is home to our Canadian office. We believe that Dow helps bring the global marketplace to Canada and also takes Canada across the globe.

Dow first established its Canadian operations in Sarnia, Ontario, in 1942. It's the first site that Dow located outside the United States and we have continued operations in Canada for almost 75 years. In Canada, Dow currently has manufacturing operations in Alberta, where we produce ethylene, polyethylene, and electricity, mainly serving the North America and Pacific Rim markets. In Ontario, we specialize in the manufacture of water-based emulsions that go into end products such as latex paint. In Quebec, we produce styrofoam SM brand insulation to build energy efficient homes.

Dow Canada is a founding member of Responsible Care, which is focused on responsible and sustainable chemical manufacturing since 1985, which is now practised in over 62 countries worldwide. We are committed to the ethic and principles for sustainability of responsible care. We dedicated ourselves, our technology, and our business practices to sustainability, the betterment of society, the environment, and the economy.

At Dow, we have long been and remain committed to applying science expertise to create sustainable solutions to some of the world's greatest challenges. We are focused on fulfilling our pipeline and harnessing the passion of individuals to work on products with the largest potential sustainability impacts. With more than 96% of all manufactured products enabled by chemistry, the solutions to sustainable development come down to the most basic elements in our universe. They come down to the power of chemistry. Dow uses science and innovation to develop more sustainable, safer solutions for the world.

We manufacture insulation products used by the building industry to reduce energy consumption and GHG emissions.

We manufacture innovative products and technologies that enable more sustainable use and management of water across the water value chain.

We manufacture structural adhesives that enable automotive engineers to design vehicles for maximum weight-saving and reduction of fuel consumption and emissions.

We manufacture innovative water based polymers that reduce the use of energy intensive paint pigments and improve indoor air quality.

At the *R&D Magazine's* prestigious 2015 R&D 100 Awards, Dow was once again highlighted as a leading innovator, having the greatest number of finalists and winners of any single developer. In fact, since the green chemistry awards were initiated in 1996, Dow has won nine times, which is more than double any other company.

CEPA and the chemicals management plan have been an integral part of the legislation that has enabled Dow to operate in Canada and is a model for managing environmental performance and chemical development throughout Canada and internationally. This is readily apparent in the Canadian model potentially being adopted in numerous countries such as Brazil, Argentina, Chile, and Peru.

Under CEPA and CMP, Dow has been able to run a successful chemical manufacturing business and reduce its environmental footprint. Since 1999, when CEPA was introduced, Dow Canada has reduced priority chemical emissions by 90%, a substance grouping which includes ozone-depleting substances, PTBs, persistent toxic bioaccumulative substances, known carcinogens, and high-volume toxics. We have reduced our chemical emissions by 41% and GHG emissions by 21%.

Since the beginning of the first CMP 10 years ago, the Government of Canada has assessed approximately 2,740 of the 4,300 substances identified for assessment. Approximately 87% of these science-based assessments concluded that the substance was not harmful to human health or the environment. Where the risk was found to be unacceptable, risk management instruments for substances or substance groups have been developed to reduce the risk to the public.

Dow Canada is not aware of any other jurisdiction in the world that has moved forward as efficiently and effectively with chemicals management as the Government of Canada. CMP is a world-leading program that we promote in other jurisdictions.

We promote CMP because decisions are based on risk assessments which consider best available technology, weight of evidence, and appropriate use of precaution.

● (1120)

Assessment decisions and risk management proposals are released, maximizing transparency. Risk management actions target identified risks for reduction. Risk managers select the best available instrument to reduce risk, regardless of the statute.

The risk assessment and risk management process are well defined and communicated. The process provides opportunities for stakeholders to inform both the assessment and the development of risk management measures. The burden of proof is appropriately shared between the government and industry. Confidential business information is protected under CEPA, and CEPA provides a formal review process for dispute resolution. Stakeholders have the opportunity to engage in science and program development via the advisory panels.

We face hazards and associated risks every day in our lives. As an example, there are hazards associated with risks for all modes of transportation, from walking to flying. In most cases, these hazards are well known, yet we don't ban transportation because there is a societal benefit. Rather, we manage the risk by reducing the hazard where possible and reducing our exposure to scientific hazards.

Parents instruct their children to look both ways before crossing the street. Governments set and enforce speed limits. Governments set safety standards for all modes of transportation, and airports implement security measures. In a similar fashion, the chemical management plan identifies and manages the risks associated with the manufacture, import, and use of chemicals that deliver solutions essential to human progress and sustainable development.

Assessment decisions based on risk and selection of measures to reduce specific risks are essential to our work to improve people's lives and the environment while striving to do no harm. This is a fundamental principle of responsible care.

Consider the example from CMP risk assessments. A CMP risk assessment of acrylamide concluded that it met the criteria in paragraph 64(c) of CEPA. As such, risk management measures were required, to reduce the risk of harm to Canadians. Measures implemented under the Food and Drug Act targeted the primary exposure of concern, which was food. Other beneficial uses of acrylamide were not impacted, such as the manufacture of innovative water-based polymers used in paint, which are an alternative to more environmentally harmful materials.

Assessment decisions based solely on hazard and management measures limited to chemical bans would make a substance such as acrylamide unavailable to Canadian enterprise, negatively and needlessly impacting innovation and the availability of innovative products.

Labelling of a substance as toxic under CEPA and the associated stigma has been problematic for industry. Substances are added to schedule 1 following a risk-based assessment; however, the public and increasingly our consumers view the list of toxic substances through a hazard lens: all substances listed are dangerous in all applications and at all levels. This is simply not the case.

The practical application of schedule 1 is the identification of substances requiring varying degrees of risk management. Ultimately, the risk management measures define the permitted, restricted, and prohibited use of a substance. As such, schedule 1 is a list of substances requiring risk management, not just understood as being toxic, and could be renamed to represent that reality.

With the debate on endocrine-disrupting chemicals, we believe the science should continue to be developed by the risk assessors and endocrine disrupters continue to be considered in assessments wherever appropriate. There is no need to take special consideration of endocrine disruption into CEPA. The potential bioactivity and its effects on potentially exposed subpopulations are already being examined as part of the regulatory process for new and existing chemicals.

In summary, the one point I'd like to leave the committee with is that CEPA and CMP are working. After 16 years, it's prudent to take a look at legislation to see where improvements can be made, but to suggest that the act is not achieving its desired effect is wrong. Let's continue with improving the management of chemicals in Canada by ensuring that the remaining chemicals are assessed and appropriately managed by the 2020 deadline. Excellent progress has been made to date, and we need to continue to move forward.

Thank you very much for the opportunity. I look forward to your questions.

The Chair: Thank you very much. We really appreciate this too. Lots of good questions came to mind as I listened to your presentation.

Next up we'll have Mr. Beasley.

● (1125)

Mr. S. Todd Beasley (Founder, Technology Co-Inventor, Chief Operating Officer, Canadian Chemical Reclaiming Technologies Ltd.): Good morning, ladies and gentlemen.

Madam Chair, I want to thank you very much for giving me the opportunity to speak here this morning. I am truly honoured. I hope the information I'll present will be helpful and most certainly thought-provoking in this most topical of conversations.

The essence of my testimony and presentation here today is that right now, technology exists and is operating on a massive commercial scale, capturing low-pressure carbon dioxide from a large industrial smokestack. Moreover, it's turning what's currently considered a waste stream into a significant value-added component. Indeed, in certain circumstances the use of a particular form of carbon dioxide can quite literally unlock a king's ransom for Canada, its citizens, and ultimately its taxpayers.

The technology can be applied to virtually every industry that produces massive quantities of low-pressure carbon dioxide and sulphur dioxide, including natural gas processing, petrochemical refining, steel manufacturing, fertilizer production, cement industries, as well as pulp and paper.

What's most exciting to me is that this technology represents the very best of what Canada can accomplish when we're appropriately motivated. It was invented by a fellow from Montreal by the name of Leo Hakka, easily one of the brightest doctoral chemists I've ever met. At one point, the technology darn near died but was saved by the Province of Quebec, either through the Quebec pension fund or the teachers' fund. Eventually, Shell Technology Ventures acquired it and was able to focus its exceptional financial and human resources, taking it to where it is today. It has now been reduced to practice as a result of the superb leadership of Brad Wall's Saskatchewan government at the Boundary Dam lignite, coal-fired power plant at Estevan, Saskatchewan. Significant real improvements have recently been made by my company, CCR Technologies, which is proudly based in Brooks, Alberta.

Indeed, if Canada's going to meet its COP21 treaty obligations, this technology will be crucial and strategic to meet those goals. Many feel that we will not meet COP21 without the capabilities of this technology.

I consider myself an objective man of science, so I say that in this context for the next half of this presentation. What I'm about to say may sound like a contradiction, folks. It's not. I will present with a firm and steadfast resolution that we should all question the current narrative on global warming and its causes from a position that we most certainly do not need massive societal changes and unnecessary and arbitrary taxes. Most important, no one needs to lose their job over this. If we do it right, Canada can make a fortune in this activity.

Why should we consider the current narrative on global warming? Because no less than the head of physics at Princeton University, the professor of meteorology at MIT, professors at the Pasteur Institute, professors of atmospheric sciences at the University of Alabama, the professor of climatology at the University of Manitoba, the founder of Greenpeace, and many others question this current narrative. They use words like “biggest fraud in mankind's history”, “nothing but propaganda and misinformation”, “grossly exaggerated results in order to promote their cause”, “mass media propaganda masquerading as the truth”. IPCC's supposed consensus is neither a peer-reviewed science nor anywhere close to a consensus.

Other societal problems are much more urgent. Folks, if we're going to have a Canadian Manhattan project, I'd like to see Canada curing cancer. What a national goal that would be. We have it within us to do just that.

In addition, major scientific institutions such as NASA and the centre for nuclear research, CERN, have recently put out press releases offering significant proof that these scientists are right. You might have heard about the global sea ice on our poles and how it's been receding. Folks, on December 21, 2015, a NASA Goddard press release stated that new satellite analysis showed that the Antarctic sea ice has shown a net gain of 112 billion tonnes of ice every year from 1992 to 2001, and from 2003 to 2008 Antarctic sea ice has expanded every year with a net gain of 82 billion tonnes of ice. The implication is that the earth is cooling; it's not heating up. This directly contradicts the IPCC statements with scientific facts.

● (1130)

In May 2016, CERN, the European Organization for Nuclear Research, issued a press release. You may have heard of the large hadron collider. This is the most significant science experiment currently under way that mankind is embarking upon. Their press release stated that their analysis directly contradicts the IPCC position in that their research concludes global warming is entirely natural.

These are not scientists to be glibly dismissed, period. Before you make legislative change, I would implore you to fully investigate these positions. In fact, I would suggest you invite some of these scientists to this committee before you make your recommendations.

Folks, back to the issue at hand. All of that being said, air pollution is not okay. I don't think anyone is arguing that. Indeed, we must clean up our industrial messes, particularly when it's economically and technically advantageous to do so.

My message here today is this: we have a pollution problem, but what it is not is an existential threat to mankind. Current clean air legislation, perhaps with some slight modifications, is more than adequate to protect our environment. Moreover, I believe that the best Canada can accomplish in this argument is to show leadership in developing and fully maturing technology that the rest of the world can then confidently adopt, not because of taxation and legislation, but because it makes economic and technical sense to do so.

The Chair: Mr. Beasley, I hate to interrupt, but I do hope you know that we are looking at the CEPA review.

Mr. S. Todd Beasley: The Canadian Environmental Protection Act; is that CEPA?

The Chair: It is.

Mr. S. Todd Beasley: This is absolutely poignant and topical to the discussion.

The Chair: I don't know. I'm just trying to get to the point. We're looking at how we may change the CEPA regulations.

Mr. S. Todd Beasley: Let me tell you about some technology now.

The Chair: I think that would be very helpful.

We have three minutes.

Mr. S. Todd Beasley: Fundamentally, the answer to this is technology. The technology I'm referring to is a very well-established field of science called gas treating. It originated in the 1940s. In the early 1950s, there was a family of chemicals called ethanolamines developed and they allow the absorption of carbon dioxide and hydrogen sulphide from gas streams, primarily from natural gas.

When it was first developed, it was required to have at least 350 pounds of pressure in order for that technology to work. Key advances in the 1980s allowed for the ethanolamine chemistry to be applied to low-pressure applications, in effect, atmospheric absorption. I use the analogy of a bottle of pop. You can put carbon dioxide into pop when it's kept under pressure, and ethanolamines act in a very similar way. They have the ability to absorb impurities and the ability to move them and concentrate them.

The Boundary Dam project is the world's first attempt at utilizing the technology for post-combustion carbon capture from a lignite coal-fired power plant. The technology is intersecting stack emissions and removing these airborne pollutants virtually completely. The Saskatchewan government, together with Shell Cansolv technologies, has installed the scrubbing technology at Boundary Dam. CCR Technologies is supporting the program by developing chemistry purification systems.

The implications of this technology are massive, folks, and world changing. Currently installed in one stack out of five, the technology is working and being continuously improved. Scrubbing the emissions from one stack alone at Boundary Dam—Madam Chair, here's the point—the technologies are removing the equivalent of the city of Regina's daily emissions, every car, every truck, every home, water heater, furnace, every streetlight, every industry, virtually everything. Imagine the impact of this technology as it's expanded worldwide. Indeed, the Boundary Dam plant is the standard with which the world powers itself. There are over 7,500 plants around the world exactly like Boundary Dam.

Without delving too far into the science, the *Reader's Digest* condensed version is that two ethanolamine chemical families are used at Boundary Dam. The first chemical solution is simultaneously scrubbing the sulphur dioxide and carbon dioxide from the flue gas. This gas is then concentrated and introduced to a second scrubbing system where the two are separated. The sulphur dioxide creates a value-added by-product: acid and then fertilizer. The carbon dioxide is compressed to a super-critical state and subsequently injected into stable geologic formations for storage, sequestering, or in the case of Boundary Dam, for enhanced oil recovery.

To give you an idea of the impact of this technology right now, it is expected this year that the Boundary Dam single stack capture program will capture and sequester 800,000 tonnes of carbon dioxide. This is not the equivalent of a solar panel or a wind generator.

I'll quickly move on to super-critical carbon dioxide. As you compress it in conditions in excess of 1,047 pounds per square inch at 37°, it becomes a massive and significant super-solvent. If we inject it into oil reservoirs or stable geologic formations that have lost their pressure, ultimately it can unlock a significant financial resource for Canada. I believe over $200 billion was transferred from the west to east because of oil revenue, and I think it's strategically important to Canada that we keep that going.

Fundamentally, treating technologies' role is absolutely crucial to this technology. Much like the oil in your car, by keeping it clean, if it was clean always, your engine would never wear out.

● (1135)

The Chair: Thank you so much. I'm sorry to have to do that, but I did give you a little extra time to try to help you.

Mr. S. Todd Beasley: This is what we do, folks.

The Chair: I know there's a lot of good information that you want to share with us, but I think it's going to come out in some of the questions.

Thank you.

We now have our last presenter, KPD Consulting, with Kerry Doyle and Chris Bush.

You have 10 minutes.

Mr. Chris Bush (Operations Manager, KPD Consulting Ltd.): Good morning, Madam Chair and members. Thank you very much for this opportunity. We're quite excited to be a part of this review of CEPA 1999. We sincerely hope that this looking back will help us all move forward better.

To begin, I'd like to point out that as reported in 2014, agriculture and agrifood systems are directly responsible for $108.1 billion or 6.6% of Canada's gross domestic product, and provide one in eight jobs in Canada, employing over 2.3 million people.

In preparation for this appearance, I noted that CEPA 1999 says virtually nothing directly about agriculture. I also noted that the Canadian Federation of Agriculture has urged the government to engage the farming community more widely in the CEPA five-year parliamentary review process.

In the current landscape of Canadian manure management law, a great deal can be gained in a short time. Miller Thomson lawyers did a very good body of work that's an overview of this. It points out that virtually nothing in the federal laws controls agriculture nutrient application other than a little bit in the Fisheries Act, specifically section 36. Otherwise, the federal role is primarily advisory and supportive of the regulatory initiatives of the provinces, which vary greatly.

Miller Thomson has been quite active in this space, sounding the alarm for what they see as the coming storm. We need to be prepared for what's happening around us. Farms are being held responsible for their environmental impact. Agriculture is a very large part of the economic landscape of Canada, but it's recognized as also having a very significant environmental footprint.

All governments are responsible for protecting their citizens from the actions of others. This is evident from the many legal proceedings that are going on or have already been decided. It's clearly evident from the impact on airsheds and waterways, that the current systems aren't working well.

An additional point of interest is that in 2014, when Miller Thomson put that presentation on, there were five different groups that did presentations in the Fraser Valley of British Columbia on exactly the same topic, with exactly the same information, trying to reach exactly the same audience, but none of them achieved critical mass where they actually got anything done.

I believe Mr. Doyle and I are well placed to speak to this committee. We've both been active in this space, Mr. Doyle for more than 25 years, specifically addressing soil and water through nutrient extraction and utilization. I've spent more than 10 years working in methane capture and cleaning, building the first anaerobic digester for agriculture in British Columbia, which was the first to scrub the gas and put it in the utility grid in North America. We've both been part of the second on-farm digester to do this. I was supporting the operations and cleaning that up.

Recently, we were able as a team to keep a $3-million research and development pilot plant asset from leaving the country. It was paid for by the Canadian government. It is now placed at this farm where the rest of this technology is. Mr. Jessop referenced the need, that gap in industry. This is now an industry-owned asset. It is a pilot plant that can take ideas from the lab bench, working with academics, to the pilot plant scale, and then directly into commercial scale right outside our door. We welcome the academic community as well as other members that have technologies that can support this.

In large part, we're here today because Mr. Doyle has been recognized by the White House through the U.S. EPA as delivering one of the 10 best technologies available in the country to address these challenges. It should stand out to this committee that in America, the EPA is responsible for looking after these things. Ultimately, regardless of whatever is deferred to the provinces or other bodies such as the CFIA or the Canadian Federation of Agriculture, if there's trouble, it will roll back up to the Ministry of Environment and Climate Change Canada.

I've been serving with Mr. Doyle for more than 18 months now. I recognize that the only way we're going to reach these targets and achieve these solutions is through systemic answers. If we will come together, there are a lot of different technologies out there. They're scattered all over the place. There is no organization. We need some sort of an overarching strategy. I believe this body of work can provide that. If we have some structure, if we have some recognizable mapping of the landscape, then we can start to make a difference and do what Canada is able to do.

● (1140)

We will see a day when the milk that comes out of dairy farms, for example, is a by-product, because progressively, as technology is applied, we're seeing more and more value coming out of what's seen currently as waste.

A couple of recent things have happened. Ontario has just launched a $100-million program to support renewable natural gas programs. California has just mandated management of greenhouse gas emissions with a specific mandate to look after greenhouse gases through renewable natural gas projects.

I believe Mr. Doyle, our witness, has been elevated recently. On June 1, British Columbia signed what's called the Pacific coast climate leadership action plan. It unites three American states with British Columbia to derive solutions of all kinds to address the challenges systemically.

Washington state just passed House Bill 2634, which shifts some of the funding that's been made available to various municipal waste and other streams to deal with environmental challenges over to agriculture, because they recognize a dollar spent addressing challenges, addressing these opportunities in agriculture, is the best possible dollar they can spend. It has far more impact.

We have four recommendations: that the committee look at the new CEPA in a more holistic or, as other witnesses have said, a more whole-of-government way; that the committee glean from what has been done in other jurisdictions and countries to identify the proven best practices and policies to create a balanced approach to environmental protection specific to agriculture that also respects the economic sustainability of Canada; that an overarching policy framework for agriculture become a meaningful component of the CEPA; and that industry-led intelligent business programs like the national industrial symbiosis program, for example, which Canada signed on to in 2012, be used as a mechanism to derive these answers.

Am I under 10 minutes?

The Chair: Oh, yes, you're under. You have a few more minutes if you want to share anything else with us. If not, we can move right to questions, and I'm sure more will come out in the questions, but it's your time.

Do you want to go questions?

Mr. Chris Bush: I can go to questions.

The Chair: Thank you very much, we appreciate that.

Mr. Amos, you're first up.

Mr. William Amos (Pontiac, Lib.): Thank you, Madam Chair.

Thank you to all of our witnesses today. Your consideration of these important issues related to CEPA is really appreciated.

I'd like to start with Professor Jessop.

It is clear from your testimony that government support for green, I'll call it sustainable chemistry technology, is crucial to this. I understand that the Government of Ontario made significant investments about a half a decade ago, maybe seven years ago. You've pointed to the enabling of commercialization as being a critical threshold issue. I wonder if you could speak to the collaboration that you have had with large chemical companies, for example, Dow Canada. What kind of collaboration has the academic green chemistry community received from larger chemical companies? I recognize the government funding stream is very important. How has the private capital stream been of assistance or not?

● (1145)

Dr. Philip Jessop: The assistance from industrial partners is extremely important. It's a bit weaker in Canada than in the U.S., because of the lack of industrial partners that are headquartered in Canada, which is a requirement for the federal government's matching funding. But the assistance of those industrial partners, whether or not we can get matching funding, is crucial in guiding us to making sure that our products are actually useful to industry. It's not just a matter of money; it's also a matter of guidance towards real needs. Some professors, certainly not the majority, have good contacts in industry and are able to use that to guide their discovery research as well as to further development in making technologies that can be commercialized.

Mr. William Amos: I'd like to follow on that question with a very brief one for Mr. Burt.

Mr. Burt, the presentation that you provided in writing, while very informative and data driven, and I appreciate that, didn't focus specifically on Canada. It was a much more global perspective.

Is Dow prepared to provide us with an overview of its operations in Canada and provide also some specific reference to sustainability initiatives or green chemist initiatives that are under way here? The insulation reference, I think that's apropos. I'm sure there are others, and I think our members would be interested in learning more.

Mr. Michael Burt: That's a good question. I appreciate it.

The numbers I gave you on some of the emission reductions that I spoke about in my notes are Canadian-specific; they are not global. But as a global company, you can understand that we spread our R and D across the globe as much as we can. The focus is mainly on the U.S., but in Canada, all the initiatives I've given when I spoke about a reduction in GHGs and our priority chemicals involve Canadian numbers.

From a sustainability standpoint, as a submission to the panel I gave our 2025 sustainability goals, which comprise a global initiative. I can't pull numbers, I guess, off the top of my head for some of the Canadian issues that we have, but in our operations in Alberta and Quebec and in Ontario we have made a substantial reduction in the chemicals of concern that have come up.

In Quebec, we have a credit position when it comes to our GHGs, which we transfer to our operations in California. Quebec and California have a program whereby you can transfer GHG credits between those two jurisdictions. One issue we've undertaken in our older operations in Sarnia has been to clean up a lot of the sites we had as we initially sited our operations in Sarnia but, because of economic considerations and lack of feedstock, transferred in large part to Alberta.

From a Canadian perspective then, we're very much in line with meeting our global goals, but I'd be more than happy to submit some information specific to Canadian goals at a later date to the panel as well.

Mr. William Amos: Thank you. I would appreciate that.

Madam Chair, how much time do I have left?

The Chair: You have a minute and a half.

Mr. William Amos: Okay. I'll be quick on this one.

I've asked other industry participants to do some blue sky thinking. It's inconceivable to me that CEPA 1999 cannot be improved to be rendered more sustainable, to be strengthened, and not in a way that is negative for industry, but in a way that actually enables industry.

What in Dow's opinion could be done to strengthen CEPA, taking as a starting point that while CEPA 1999 and the CMP system may work, it could be improved. Everything can be improved. What could be improved?

Mr. Michael Burt: I agree with that.

One issue Dow has is with the 2025 sustainability goals, what we refer to as a circular economy. One aspect we consider is that we want to make sure that any waste generated from one process is used as a raw material for another. One aspect that CEPA can look at from a risk perspective is how the waste streams are generated, whether there are other opportunities for them, how they are disposed of, whether they can be rolled into other products in manufacturing opportunities within Canada.

As I've alluded to in my talk, it's appropriate and timely to have a review of CEPA. What we don't want to do is throw the baby out with the bathwater, so to speak. One way in which CEPA can be strengthened is by looking at the holistic circular economy of the products that are developed and seeing what happens at the end of the day to these products.

● (1150)

The Chair: Thank you very much.

Mr. William Amos: Thank you.

The Chair: One thing I always do and forgot to do is welcome new members to the table. I would like to welcome Filomena Tassi, who is joining us at the table today. I'm sorry I did not recognize you earlier.

I'd like to turn the floor over to Martin Shields.

Mr. Martin Shields (Bow River, CPC): Thank you, Madam Chair.

I appreciate the witnesses being here. We always gather a tremendous amount of information from the variety. It's a great learning experience for us.

Mr. Beasley, at the end of your presentation you were talking about another thing I was interested in, when you talked about development of industries that go with yours, as you've developed this business. I think you have a history of developing in this area with other businesses that you work with. Is there an explanation of the types of businesses and other industries that you have involved yourself with throughout your history in this industry. Can we get an idea of how many people are involved in the type of development you're involved in?

Mr. S. Todd Beasley: It's literally hundreds, if not thousands.

Fundamentally, we try to create technologies that have superb technological capabilities that produce by-products that are able to add value to the equation. We're interested not only in technical capability, but in the overall economics that are going to provide the best return, so that ultimately it's not government supporting the installation of these technologies, but industry, shareholders, and fundamentally again, superb technologies that have significant value-added by-products. Again in the context of the Boundary Dam project, we're taking what is considered waste and turning it into fertilizers. We're able to grow it and put it into crop nutrients, which has major societal benefits. We're then able to go ahead and use the carbon dioxide in a myriad of ways, but primarily in enhanced oil recovery, which represents hundreds if not thousands of ultimately sustainable jobs.

Mr. Martin Shields: You're identifying agriculture, and you're identifying the oil sector, but with the types of other businesses that are involved in working to develop this, and the materials you use, what other industries are involved with building these types of things?

Mr. S. Todd Beasley: Oh, it's significant manufacturing. SNC-Lavalin, for instance, provided the engineering for the Boundary Dam project. It represented enormous engineering and skilled, high hourly labour components for Quebec. This is truly a cross-country investment that was made. We have engineering. We have construction. We have intellectual property people who manage how these technologies are ultimately protected for the benefit of the stakeholders. Literally hundreds, if not thousands, of employees over a myriad various industries and disciplines are necessary in order to fully take this technology forward.

Mr. Martin Shields: Has there been an international aspect to the companies you've been involved with?

Mr. S. Todd Beasley: Absolutely. Our technology, the CCR technology, is installed on five of the world's continents. We are in the Gulf of Mexico. We are in the North Sea. We are in the Russian Sakhalin project. We're off the coast of Australia. Fundamentally, we've just started up the largest system of its type in Saudi Arabia that's quite literally the size of this building. This represents a major opportunity for Canada to keep these treating chemistries pure and to provide this value-added technology that Canadian taxpayers and Canadian people can benefit from.

Mr. Martin Shields: With the industry you're in, are there competitors out there that are in Canada?

Mr. S. Todd Beasley: I would say there is no direct competitor that can achieve the technical capabilities of CCR Technologies. What we are able to do is take a highly inconsistent chemical stream, irrespective of the concentration and the types of impurities that are in that feedstock, and we can generate a consistently refined product that rivals the purity of new chemistry. No one in the world can stake that claim.

Moreover, the percentage of recovery of the mass that comes into the technology exceeds 98%, so the amount of waste volume that needs to be disposed of is dramatically lowered, because 98% of the mass can be recovered with this technology.

Mr. Martin Shields: Thank you, Mr. Beasley.

Professor Jessop, I appreciate your presentation. You made a statement about performance-based regulation, which is something that is intriguing to me. Can you explain how you would define that and what it would look like?

● (1155)

Dr. Philip Jessop: I would suggest that if toxicity reduction this year is your goal, instead of saying the individual chemicals in a formulation or product must have below a certain toxicity per gram, rather say the formulation has to have less than a certain toxicity. If someone's changing from that surfactant that's a bit more toxic but far more effective so that less is being used, you would get credit for that in terms of your overall formulation being a lot less damaging to the environment. If you regulate chemicals individually per gram of the chemical rather than per gram of the formulation, then that surfactant that would give such a big green improvement would not be allowed.

Mr. Martin Shields: In the process of identifying toxic, non-toxic, and serious risk, how does that process fit into that prospect? You have to identify the toxic chemicals. How does it fit in there?

Dr. Philip Jessop: I don't think there's such a thing as a toxic chemical versus a non-toxic chemical. All chemicals are toxic, even water. If you drink four litres, you would die of water poisoning. Everything is toxic, but it's a matter of degree.

You have to have a surfactant in a surfactant, or it won't work without it. If you have a surfactant in there, how toxic does it make that formulation? How much toxicity is being introduced into the environment by using that shampoo compared to another shampoo? The way you evaluate this is through a life-cycle analysis. You can't evaluate just by saying per compound, per gram, how toxic is it. You have to look at the formulation to get an assessment of the environmental impact.

Mr. Martin Shields: Thank you, Madam Chair.

The Chair: You increased the complexity multifold, because now formulations.... Oh, my gosh, my head is spinning.

Mr. Cullen.

Mr. Nathan Cullen (Skeena—Bulkley Valley, NDP): I made it, barely, through second-year organic chemistry. There's no way I'm going to follow that particular line of questioning.

Professor Jessop, I have one quick question for you.

Do you see any value? I don't know if you have experience with the U.S. market, but there's been some testimony that's talked about trying to harmonize with some of the efforts being made in the U.S. When you talked about de-risking innovations and the scale-up challenges that we have in Canada versus the U.S., is there any value in our seeking some harmonization with the higher standards in the U.S.?

Dr. Philip Jessop: Absolutely. I think the best thing for industrial uptake of technologies is minimization of risk and minimization of legislative complexity. If we have different regulations in Canada versus the U.S., I think that will inhibit uptake of new technologies.

Mr. Nathan Cullen: Thank you for that.

Mr. Burt, Dow has extensive operations both in the U.S., your home, but also in Europe as well. Is that true?

Mr. Michael Burt: That's right.

Mr. Nathan Cullen: You work within the confines of the REACH program in the European Union. Is it less profitable, less innovative for you to work under the jurisdiction there?

Mr. Michael Burt: Obviously, we continue operations in Europe so it's a profitable geography for us. Our preference is to go with a risk-based assessment that we have here in Canada and North America. There has been a lot of talk about the REACH program, CMP, some of the other programs they have in the U.S., but I think most of the countries are now realizing that a risk-based assessment is the type of a process that—

Mr. Nathan Cullen: One of the other principles, aside from the risk-based approach, is the no data, no market. We've heard from several witnesses, including the Mining Association of Canada, the Canadian Labour Congress, Dr. Scott, that the data available under the Canadian system is incredibly poor and that there are qualifications in Europe that you can't bring a product to market without sufficient data as to its exposure and the risk to consumers and the broader public. Would an increase in the data available to Canadian consumers provided by industry be of some benefit?

Mr. Michael Burt: Well, I guess I would take exception to the fact that they state there's substantially less data for products coming online in Canada. We see that a lot of the chemicals that are being introduced are being assessed quite appropriately.

Mr. Nathan Cullen: Let me ask you one specific thing, though. We've heard through testimony that the Minister of Health can't demand data from companies. The Minister of the Environment can on certain things under CEPA, but that provision does not allow the Minister of Health, if there are health concerns raised about a product, to insist that data be collected from the industry providing that product. Would that be something that Dow would be open to considering?

Mr. Michael Burt: When we have new products that come online both in Canada and the U.S., we get multiple requests for additional data, sometimes from many different regulatory bodies. We try to adhere to those and provide them when possible. I'm actually not familiar if the Minister of Health could demand or not here in Canada.

Mr. Nathan Cullen: There has also been a question about consistency through the marketplace. That water bottle you have in front of you I suspect is BPA-free.

● (1200)

Mr. Michael Burt: Yes.

Mr. Nathan Cullen: Yet the soup, if you were to take a bowl of it, came from a can where the inside of the can was laced with BPA products. We ban it in bottles to prevent children from being exposed to BPA, yet the can of soup that mom or dad buys for them from the store still has BPA and the exposure happens. Should we not have a more consistent approach to these types of things, if we deem them toxic?

Mr. Michael Burt: It's all risk-based, how the BPA is being applied.

Mr. Nathan Cullen: Sure.

Mr. Michael Burt: Typically, BPA in most products is harmless unless the element is being heated up. If you have a situation where you don't have any heating of the element, it's typically not released into the environment. One of the strengths about CMP and the Canadian legislation is that we look at how it's utilized, how it's risk-based.

Mr. Nathan Cullen: Sure.

Dow recently lost a case in Louisiana on asbestos. You had to pay out a $6-million fine. There's a bit of a contradiction. This came up in testimony earlier as well, that when we're looking at toxics, looking at something like asbestos, where Dow and other companies have persistently fought the banning and use of asbestos in the workplace, it provides something of a contradiction to your earlier testimony, I suppose, about responsible care and, you know, we advise our children to look both ways.... We have a known carcinogen that remains in the Canadian marketplace continuing to do harm. I don't understand the company's stated goals of being more responsible, given its litigation record and its lobbying record against the EPA, for example, to continue to allow asbestos to be used in things like brake pads and other products.

Mr. Michael Burt: Once again, I guess I'll go back to the hazard versus risk discussion that we've had. Most elements on the planet are toxic at some level. Some are hazardous; some are carcinogenic. Dow continually looks at a risk-based approach with most of its products, so in some uses and applications we have scaled back many products, and in others we've continued to fight for their use.

Mr. Nathan Cullen: As we go through this conversation, we're often looking for new recommendations on substitution policy. I find it a bit confusing. I don't suspect anyone around this table would want to move into a house if they were told there was asbestos in the attic. Someone could say that they used a risk-based approach and they feel it's safe. If given an alternative for my kids to grow up and work in an auto plant or in a mechanics' shop, between brake pads coming in made out of something other than asbestos, then I would suggest that they're fine to take that chance. I simply don't understand why we don't have better substitution and more urgency from companies like yours to simply acknowledge what we all know, that exposure to asbestos in any form would be something seen as undesirable, if not outright litigious.

Mr. Michael Burt: Most large chemical companies, Dow being one of them, continually look for substitutions of products. That's one of the things we do in our R and D: can we make it better, safer, faster, and less expensive? Moving forward, I'm sure we will continue to use that process.

Mr. Nathan Cullen: Thank you.

Thank you, Chair.

The Chair: Thank you.

Mr. Fisher.

Mr. Darren Fisher (Dartmouth—Cole Harbour, Lib.): Thank you, Madam Chair.

Thank you very much to the witnesses today.

Kerry and Chris, when this committee was first formed, I said that the environment is our biggest challenge, but what a lot of people don't recognize, and you guys do, is that it's also our biggest opportunity: take an environmental issue, find a solution, create economic value, and provide jobs. That is equally true of waste water and sludge treatment as it is with mercury-bearing light bulbs and how you handle them at the end of their life. Find a solution, create economic value, provide jobs.

This is an amazing example of the green economy and things that we talk about in government all the time. I'm really interested in your inspiration for this, your struggles, how does something like this come about? Do you see that as a problem first and then as a possible economic opportunity?

Is this something you want to do? Do you want to green the earth? What type of struggles do you have when you're trying to do this? Is it finding markets for the pieces?

My last question for you folks would be, how can we encourage more companies to see this as an economic opportunity?

Mr. Kerry Doyle (President, KPD Consulting Ltd.): Madam Chair, first, I'd like to thank you for allowing us to present.

Manure isn't very glamorous.

Voices: Oh, oh!

● (1205)

Mr. Nathan Cullen: Be careful what you say around this table, sir.

Mr. Kerry Doyle: We're in a different *[Inaudible—Editor*].

However, it's fact of life if we want to have intensive livestocking, we need to figure out how to make that work on the planet.

You asked how we got started. People ask us that all the time, because again, manure isn't very glamorous. It came from growing up on a dairy farm and coming from that background and engineering schools and generally working our way through the industry and seeing there's a problem, but more specifically, there's a solution and a use.

When I sit around the table and I hear the word “waste” used all the time, I find that very disturbing because nothing is a waste on the planet if if's looked at from a—

Mr. Darren Fisher: It can't be.

Mr. Kerry Doyle: Yes.

When you ask about our solutions, a limited amount of resources are available to our livestock people and that resource is land, because that's how they typically deal with manure. They land apply it.

In the example of the Fraser Valley, the vast majority of the nutrients required there are imported from Alberta, the U.S., for feed, and they remain in the Fraser Valley in a very highly concentrated farming area and they need to be exported. We're getting out of balance there.

Mr. Darren Fisher: I want to get to Professor Jessop as well, but what can we do to inspire more companies to look for things, as you did? Outside of funding or grants, is there a way that we set our own example of greening government? I don't know.

Mr. Kerry Doyle: The whole approach to this.... Our largest market, or our sustaining market, has been the United States purely because the economics are the driver in the United States. We need to take a product, like manure, and create revenue from it. We have to go back to the basics of what manure is made of, break it into those components. Some of the things we are looking at.... I just want to talk to this. The lab facility that Chris talked about, that has been resurrected in British Columbia, is key to this development. It's absolutely key. We had to leave Canada to develop this.

In doing so, we have been able to take manure, the larger fraction of it, and concentrate nutrients that can be put in the form of a granular fertilizer and export it anywhere in the world. More important, the larger part of animal manure is fibre and that fibre has an unbelievable resource, and that resource has to be unlocked. We are currently looking at our friends from Dow. We use them. Their products are critical in our process, polyacrylamides. Without polyacrylamides, this would never work. It's absolutely critical.

Is that the end run? No, we continue to look for more organic or natural methods to do that, but until we find them, we have to use what's available to us, used, like Professor Jessop said, in very minute quantities to achieve our goals.

The fibre can be generated, turned into organic fertilizer once the lignins are exposed. Once we crack the sugars, they can all be exposed.

Mr. Chris Bush: May I answer the question?

Mr. Darren Fisher: Yes, quickly, please. I don't know what my time frame is.

The Chair: You have 15 seconds.

Mr. Darren Fisher: I'm not going to get to Professor Jessop.

Mr. Chris Bush: If we hold the producers of these non-point source emissions responsible, that will start to drive it. That is happening already through events in other places. If we go with a stick, we're going to do a lot of damage. If we can come up with intelligent programs that motivate the driving of these technologies.... Kerry has found great success in the United States. We've just been able to secure this equipment in Canada. Make it exciting. Show people there is a money train that's available in what's been seen as waste.

The Chair: Thank you very much.

Mr. Fast.

● (1210)

Hon. Ed Fast (Abbotsford, CPC): Thank you, Madam Chair.

I found the witnesses' submissions to be fascinating, because they're really flowing into one narrative here, which was defined by Professor Jessop. He's talking about green chemistry. He's talking about how we define green. He defines it as being less hazardous than what was used before. I'm hearing that's the goal, especially with Messrs. Bush and Doyle.

Mr. Burt, Dow Chemical is probably among the largest users and producers of chemicals in Canada. Is that a safe statement?

Mr. Michael Burt: Yes.

Hon. Ed Fast: You have a significant presence in Ontario, Alberta, and Quebec. There was a witness who appeared before us earlier on CEPA who suggested that Ontario is among the most profligate of provinces and jurisdictions in North America when it comes to the emission of toxic and hazardous substances.

Do you concur with that assessment? Is Ontario really that bad?

Mr. Michael Burt: I believe you are referring to a comment that the Canadian Environmental Law Association made where they compared Ontario and California, and Ontario had a substantially larger order of magnitude in releases than California, which is a substantially larger jurisdiction.

The problem is that you are literally comparing Ontario's apples to California's oranges. You have a province here in Canada that is a high manufacturing industrial province and you're comparing it to a state in the United States which has very little manufacturing. It's basically an IT, high-tech state. It would be far more appropriate to compare Ontario to Michigan, New Jersey, Louisiana, states and jurisdictions that have a similar economy, that are manufacturing and industrial based.

Hon. Ed Fast: Thank you.

This is a question for Mr. Bush and Mr. Doyle.

In your last response to Mr. Fisher you started getting into the details of what your technology actually does. Mr. Bush, you didn't get into the biogas part of it. I won't get you to expand too much on that. Tell us a little bit about the challenge you had. You actually have implemented this technology in the United States in a very large dairy operation. How did that go? Why did you go to the United States?

Mr. Kerry Doyle: Our first project, actually, was implemented in Delta, British Columbia, and it was sponsored partly by Investment Agriculture. It enabled a 250-cow dairy to implement anaerobic digestion and bring off-farm materials to supplement that. Since then, they've been able to increase their herd size to virtually double, without increasing their footprint and actually reduce their impact environmentally by being able to concentrate nutrients and export them.

When we talk about manure, in the business we refer to it as nutrient management—phosphorus, nitrogen, and potassium. We want to control the deposits of that and the release.

The dairy that you're talking about in the United States is formerly known as Fair Oaks dairy. It's one of the most significant dairies in the United States. They milk about 15,000 cows, and the manure is brought to a central processing facility. All of that manure is managed within the scope of the dairy. It's done with a handful of people. What we were able to do is take the manure, once it was processed, extract the fibre, and develop a value chain with that separated, concentrate the nutrients through a technology that uses.... We're talking about separating particles in manure, particle size. In manure, there are basically two particle sizes: one millimetre and larger, which is 40% of it, and 25 microns and smaller, which is the other additional 40%. The large pieces can be separated, captured mechanically. Everything that's 25 microns and smaller needs to be chemically extracted, and that's where the use of polyacrylamides and other elements that we're looking to do....

That process creates a highly concentrated sludge that we further process into what we refer to as a cake. That cake is a solid material that would be contained...90% of the nutrients, and it would be something that you could pick up with a loader and move and land apply many miles away. It can be further processed to a granule, and that granule can be sold at Walmart, Home Depot, or anywhere that you would buy fertilizer.

● (1215)

Hon. Ed Fast: I would like to direct one last question to Professor Jessop.

The Chair: Very quickly.

Hon. Ed Fast: You mentioned that the appropriate approach to assessment would be a performance-based, regulatory approach that is based on a life-cycle analysis of different chemicals. Is that correct?

Dr. Philip Jessop: Yes, that's right.

Hon. Ed Fast: Are you suggesting that the current CEPA does not allow that to happen?

Dr. Philip Jessop: I'm not an expert, but my understanding is that —

The Chair: Very quickly, please.

Dr. Philip Jessop: My understanding is it's based on pure chemical and the impact of the pure chemical, and not on the mixture and not on the amount used. If you had a fertilizer that needs very little used but it's a bit more toxic versus one that's not quite as toxic but needs a vast quantity to be used, that is not taken into account in CEPA, in my understanding. In terms of life-cycle analysis, it would be taken into account.

The Chair: Thank you very much. I appreciate that.

Mr. Bossio.

Mr. Mike Bossio (Hastings—Lennox and Addington, Lib.): Once again, as everyone has said, thank you all for coming here today. It's great testimony and an interesting discussion.

Where to start?

Mr. Burt, although you say California is not a state that has a high degree of manufacturing, I think they'd probably argue differently. What about Massachusetts?

Mr. Michael Burt: That would be one that would be reasonably similar, although I must admit, I don't know their—

Mr. Mike Bossio: What about Ohio?

Mr. Michael Burt: I couldn't tell you about that state's manufacturing.

Mr. Mike Bossio: They're both comparable. Ontario has 1,295 facilities reporting on the NPRI, and Ohio has 1,465 facilities, and yet Ontario's on-site air releases of carcinogens is almost double that of Ohio's, with 3.4 million kilograms versus 1.8 million kilograms. I wanted to point that out.

We've been talking a lot about risk versus hazards based assessment, and I like where Mr. Jessop is coming from, and even Dayna Scott, another witness last week, who had gone along the same path of it isn't one or the other. There needs to be a full life-cycle analysis that is done.

I'd like you to describe the process of looking at it from a risk versus a hazard based assessment that would be done in a life-cycle analysis. Would you agree with that?

Dr. Philip Jessop: Of a product or a process?

Mr. Mike Bossio: Okay.

Dr. Philip Jessop: Thanks. If you're comparing the new technology to the old technology, what you do is take a look, and you calculate the emissions of every single chemical that's involved in both technologies, including making the materials needed for those technologies. Then you calculate all those chemicals that are involved, good and bad, and how much is going to be released of each of those chemicals into the environment during manufacturing or use, or whatever.

Then you ask how much ozone depletion that is going to cause; how much global warming it is going to cause; how much toxicity to fish is going to be caused. All of these different environmental impacts are calculated for all those chemical releases from process A and process B. Then you sum them up and ask in terms of global warming, which process is better; in terms of smog formation, which process is better. You have maybe 10 or 20 different environmental impacts and you compare which process is better, the old one or the new one. If on the bulk of that, the new technology is less impactful than the old one, then the new one is green.

Mr. Mike Bossio: Thank you very much. That was a great description.

Would you agree from a risk standpoint it's more evidentiary as far as post-consumption is concerned, in a sense, as introduced to the environment versus a hazard? In a full life-cycle analysis you want to look at both the pre- and the post-introduction to determine which chemical is going to be less of a hazard to the environment. Is that correct?

● (1220)

Dr. Philip Jessop: Yes, sir, that's right. In a life-cycle analysis, you have to look at pre- and post-consumer. For example, if a—

Mr. Mike Bossio: I'm sorry to cut you off, but I don't have a lot of time.

You're almost looking at a cradle-to-cradle approach to chemicals and the introduction to the environment. It's great that we're looking.

Mr. Burt, one thing I have to say with Dow is that you're looking at things from a cradle-to-cradle standpoint as well.

Mr. Bush, Mr. Beasley, and Mr. Doyle, your testimony seemed to be heading in the same direction in how to take this cradle-to-cradle approach where we're taking the least hazardous approach to introducing these chemicals to the environment, but trying to minimize the impact of those that are hazardous.

Would you agree with that, everyone?

Mr. Chris Bush: Yes.

Mr. Michael Burt: Yes.

Dr. Philip Jessop: I have one more comment. If a chemical is green and harmless, but making it is harmful, then that is bad. We have to take that into account.

Mr. Mike Bossio: I would like to take it down to even a deeper level with one statement that was made by Mr. Burt, and that is, ”With the debate on endocrine-disrupting chemicals, we believe the science should continue to be developed by the risk assessors and endocrine disrupters continue to be considered in assessments wherever appropriate. There is no need to take special consideration of endocrine disruption into CEPA. The potential bioactivity”, etc.

What I would question you on this is, where there are vulnerable populations and marginalized communities, and such exposures during critical windows of vulnerability in assessments of cumulative exposures to substance and classes of substances, would you not say we need to take a more proactive approach at looking at those windows of opportunity and minimizing the toxic impacts they could have?

Mr. Michael Burt: Yes, we are in support of looking at the mode of transport when it comes to endocrine disrupters. We think the CMP and CEPA currently do look at the risk assessment. If there are vulnerable populations, then they should be taken into consideration when it comes to the risk assessment.

Mr. Mike Bossio: The risk assessment, but what about taking a hazards-based assessment approach? Would you say that, if another body, a world body, through REACH or the EPA, finds that a chemical is hazardous and toxic, it should be mandatory that an assessment be done on that product immediately? That is one instance. On the other hand, where we start to see these indications, should a hazards-based approach be taken to look at where those vulnerable populations could be impacted?

The Chair: Mike, we are running out of time. We are overtime, so if we could get a very quick answer to that, in 30 seconds....

Mr. Michael Burt: First of all, I would probably say no. The issue we have now is that we have some jurisdictions that we are not aligned with when it comes to how they assess chemicals. Just because one jurisdiction says it is hazardous, that doesn't mean Canada should unilaterally also agree with that. We need to look at our assessment—

Mr. Mike Bossio: An automatic assessment....

Mr. Michael Burt: Well, we have a risk assessment process right now.

Mr. Mike Bossio: There are many instances where that fails.

The Chair: All right, let's see if we can pick that up in the next round of questioning, possibly.

We are moving to Mr. Eglinski.

Mr. Jim Eglinski (Yellowhead, CPC): Thank you, Madam Chair, and thank you to all the witnesses for coming.

Listening to Mr. Jessop, and then KPD, I was quite interested that you both mentioned the difficulty of getting some of the changes recognized here in Canada. Mr. Bush, you summarized something very interesting to me—or maybe it was Mr. Doyle. I'm sorry. Your firm had to go outside of Canada to develop your technology and prove it.

I am running into the same thing in my riding of Yellowhead, where there is a group of companies that have formed technology in reclamation of soil and cannot get any interest in Canada, provincially or federally. They have the technology, and it is proven technology, but they had to take it to the United States. The equipment is sitting there in the United States, yet in Canada it is very difficult.

I will probably ask Mr. Jessop if he would give us the perspective from his side, but Mr. Doyle first, can you tell me where you see the problem here in Canada? Why with technology that is going to make things greener do we have to take it outside of the country? What can we do as a committee, or make recommendations on, to make it simpler for Canadian firms and scientists to develop this technology and make it more beneficial to the country?

● (1225)

Mr. Kerry Doyle: KPD is a for-profit company. To generate profit, we have to go to clients who have an economic driver to implement our technology. The reality is—and I am going to direct this to the dairy industry in Canada with supply management—it is a very unlevel playing field for producers, if you compare them to the United States in terms of what they get paid for their milk. They have to look at other opportunities or resources that come from their biodigester, which is a cow. It takes a feed input and creates all kinds of resources. Most of it goes through the animal unutilized and comes out in the form of manure. They look at that underutilized resource and say, “How can we make value of that?”

They also have a much more stringent regulation process. They are required to have and implement nutrient management plans to be able to operate a dairy. They have to collect data that relates to implementing and operating those plans. They have to fall within specific guidelines, and they have a huge regulatory body that watches them on a daily basis. That is not so for the Canadian dairy industry.

Mr. Jim Eglinski: Go ahead, Mr. Bush.

Mr. Chris Bush: There's an interesting point in our journey with the digester. In British Columbia, we have rules that are the same for everyone, but the typical farm doesn't really face any scrutiny. With us putting in an anaerobic digester, we had the light shining on every bit. We had to account for everything that came in and everything that went out. No farm wanted to be a part of that, because suddenly any discrepancies, any challenges, anything at all that might be going on would be exposed. That was a tremendous challenge also, where everyone is exposed equally there. Everyone here has enjoyed quite a lot of autonomy or privacy, I guess, in what they are doing.

Mr. Jim Eglinski: You are dealing with the two countries—and then I will go to Mr. Jessop quickly—how do you find the difference in the regulatory controls in the process?

Mr. Kerry Doyle: The regulatory controls are much more significant in the United States than they are in Canada, absolutely. A spill in Canada will maybe get a slap on the wrist. A spill in the United States will put the producer in jail.

Mr. Jim Eglinski: Mr. Jessop, can you give me a little concept of what the difficulties are that you're seeing, sir?

Dr. Philip Jessop: Yes. As a professor and also as an owner of a couple of start-up companies, I've found the same problem, that it's often actually easier to go to the U.S. than to stay in Canada to get further development. There are a number of reasons for that. There are more investors in the U.S. Sometimes there are relevant companies that could license the.... For instance, I have a new paint. There are more paint companies in the U.S. There are very few paint companies in Canada and they are not major players.

What can we do to fix that? In order to encourage the R and D and further piloting and all that to happen in Canada, there are things you can do, such as SR and ED credits or matching for development funds in Canada to try and encourage that to happen. There's also the soft stick approach that was taken in Ontario that could be spread across Canada, where you tell companies that you don't have to phase out toxic chemicals; you can just make a plan about how they could, in theory, be phased out. That encourages a lot of companies to actually do the phasing out, even though they weren't required to do so by legislation. That kind of prodding actually helps companies to meet more green-style challenges in Canada.

Mr. Jim Eglinski: How am I doing for time?

The Chair: You have 20 seconds.

Mr. Jim Eglinski: Oh well.

The Chair: We'll use that for something else.

I should introduce two other MPs who are with us today, Vance Badawey and Michel Picard. Thanks for joining us today.

Mr. Amos.

Mr. William Amos: Thank you. My first line of questioning goes to Mr. Burt.

Dow doesn't take issue with the precautionary principle as a foundation of CEPA 1999 does it? It's accepted, and would you agree it's appropriate?

Mr. Michael Burt: In certain circumstances, yes.

Mr. William Amos: Okay. There are individuals who would bring into question the credibility of Dow to articulate a public interest perspective on chemicals management in Canada, on the basis of past actions that Dow has taken. I'll cite one example, a NAFTA chapter 11 arbitration that was brought by Dow AgroSciences against the Government of Quebec which sought, back in the day—this was about eight years ago—to ensure that cosmetic pesticides couldn't be used and distributed in the province. I happened to be counsel for intervenors in that matter. It ultimately settled and Dow backed off. That's a specific substantiation of a chemicals management issue where quite clearly it was running against what the government of day in Quebec thought was in the public interest.

How do you think Dow's credibility is affected by actions taken, such as those, by one of its affiliated entities?

● (1230)

Mr. Michael Burt: Well, I don't believe our credibility is affected. As a large multinational we continually have fronts with other competitors, with other governments in other jurisdictions as to what we believe is a good product, a good science. I think the process we have going forward works fairly well. If we have an issue, we'll bring it up. It will go to a tribunal. A decision will be made and we will honour the decision.

Mr. William Amos: Do you think the average Canadian would appreciate a large chemical company challenging the public interest measure that is designed to protect the most vulnerable in our society? Clearly, we're having a discussion here with the reform of CEPA. We're having a discussion around vulnerable populations and how CEPA can be improved to ensure the protection of those vulnerable populations.

Mr. Michael Burt: It comes back to some of the comments I made earlier about Dow as an entity that has shareholders. Our shareholders are the public. Lots of times they want us to challenge some of the preconceptions about products that are coming to the market. We always have to take regulations with a grain of salt. Have they been developed in consultation with the scientific community? Are their assumptions correct? Our job as a chemical company is to make sure that our point is heard, and we will let the public and any tribunal or trial that comes make the final decisions.

Mr. William Amos: Okay. You would agree then that the primary public, whose interest Dow would seek to promote, would be the shareholding public.

Mr. Michael Burt: Dow employees are shareholders. The people who work in our company and the people who know us are all part of the public, as am I. So I have an opinion which may be no different from my neighbour's next to me.

Mr. William Amos: On a different tack, it's a widely accepted academic theory that has been borne out in regulatory practice across many western jurisdictions that enhanced regulation, call it increased regulation, can actually bring about many new, innovative approaches that then drive the economy.

Would you agree with that statement?

Mr. Michael Burt: I would to a certain extent. The problem that you run into with regulations is timing. Individuals spoke earlier about the need to harmonize some of the regulations between Canada and the U.S. Right now Canada has a very onerous environmental regulatory regime. Lots of products and innovation can be stifled when things take so long to come to market, and people will move to other jurisdictions.

In that sense it is stifling innovation. It's a double-edged sword where, yes, forcing companies to look at other alternatives can be beneficial, but at the same time we have to be careful that it's not so onerous that they just move to another jurisdiction, and innovation has stopped.

Mr. William Amos: I will pause and I will think further on that notion that Canada has an onerous environmental regulatory regime. I think you'd find that there are many witnesses who have come before us who would disagree entirely.

I'd like to pose the question to Mr. Bush and Mr. Doyle around that issue of regulation with a view to enhancing innovation. One of the things our government is very keen on—

The Chair: You have less than a minute.

Mr. William Amos: —is enhancing our economy's capabilities to innovate, produce new products, and generate new economic opportunities in our communities. How do you think new regulations or enhanced regulations can help achieve that?

● (1235)

Mr. Chris Bush: I think we have to be careful how we do them. If we all go for, as someone said, a soft stick, if it's all about sticks, we're going to get in trouble. I mentioned the industrial symbiosis program. They take a novel approach. They go to businesses. They say, "You have resources that you're not getting full value out of. You have waste streams. You have these various things. Let's find ways to bring value to that, and we'll drive economic sustainability for you, and we'll add up the environmental benefits later."

That is a very good approach. It's effective. Businesses buy into that. Again, if you suddenly pounce on an industry that has enjoyed this tremendous freedom for a very long time with very strong regulations—our average farmer is 59 or even 60 now in Canada—they may just quit. Then we would have a problem because we need to eat.

The Chair: I have to end that line of questioning. Sorry about that.

We'll go over to Mr. Cullen. You have three minutes.

Mr. Nathan Cullen: I'm going to pick up, I hope, where Mr. Amos left off.

Mr. Bush and Mr. Doyle, I almost want to suggest we call this the myth-buster study because of something that you referred to in terms of where Canada stands vis-à-vis the United States, for example. I think the myth in Canada is that our regulations in all cases at all times are better and at a more elevated level than those of our trading partners. I think, Mr. Doyle, you suggested that weak oversight, that if there were a spill in the U.S., the consequences would look dramatically different than if in Canada, and that some of that regulation with incentive has led to innovations just on the waste management within the agriculture community.

Is what I have said correct so far?

Mr. Michael Burt: Yes.

Mr. Nathan Cullen: Okay.

Mr. Burt, I have a question around this average person affected as it's viewed in CEPA right now. We've heard testimony at the committee that this does an inadequate job of protecting vulnerable populations. Many colleagues have shared this concern, I think, around the table that if we're not using the right test subject, then we set limits of exposure that are inappropriate. That exposure to infants, newborns, to the elderly, to people who are sick.... If we're not using the appropriate subject, then whatever exposure rates we allow into the environment are inappropriate.

Would Dow be interested and supportive of the committee looking at recommendations to CEPA that would change that test, change that standard from the "average person"?

Mr. Michael Burt: We'd be very interested in working with the committee to look at the standards you're looking at developing, and how they would be based on a risk assessment. We're never going to be against an opportunity for us to get the science right.

Mr. Nathan Cullen: Does Dow see any concern at all with the use of that "average person" as CEPA is designed right now?

Mr. Michael Burt: In CEPA and the chemicals management plan, you do have the opportunity to request more data on specific subpopulations.

Mr. Nathan Cullen: One standard that we've heard, as compared to the European Union and to the United States, is the standard around bioaccumulation, chemicals that are made that Canadians are exposed to. The threshold in Canada allows for a much higher level of exposure to chemicals that we know bioaccumulate in our system. We have heard this relatively conclusively so far.

Would your company have any concern about at least reaching to the standards that are held by Europe or the United States with respect to bioaccumulation?

Mr. Michael Burt: I wouldn't declare that we would be in favour of any standard in any other jurisdiction without having a proper look at it.

Mr. Nathan Cullen: What about elevating Canadian standards?

Mr. Michael Burt: We'd have to take a look at—

Mr. Nathan Cullen: The concern that we run into is that we're looking for specific recommendations on what to do with CEPA.

At the end of the day, the committee is charged with a task of writing a series of recommendations to ask the government to respond to. With regard to the caveats being offered up, I understand your concern that signing on to anything without details is challenging but at the end of the day, we have to make those recommendations. We've heard witnesses suggest that Canada's standards on a couple of these key components in CEPA are weaker. We've heard from the agricultural side, the chemical exposure side. We're going to need some recommendations.

The chemical industry has been hot and cold on this in the past on motions that we've moved through the House. Any specific recommendations you may have, considering what you've heard from MPs today, would be helpful.

The Chair: You've heard a couple of questions. You might want to give us more answers in written form to the committee. We'd welcome anything you may want to share with us now that you've heard our lines of questioning, to help inform us as we move forward on this study.

I want to thank all of you very much for coming and spending this time with us, and sharing your wisdom and knowledge with us.

We do have to go into a closed session to do some important report work. We're going to say thank you, and then we're going to go in camera. You'll have to exit the room very quickly.

I will suspend the meeting for just a few seconds and then we'll start again.

[*Proceedings continue in camera*]