Chemicals Management Plan
Stakeholder Advisory Council and Multi-stakeholder meetings
Ottawa -- May 22 - 24, 2019

Report from Dorothy Wigmore, representing
the Canadian Association for Research on Work and Health (CARWH)

Overview

The SAC meeting lasted 1.5 days, with presentations and discussions about:

- the National Pollution Release Inventory (NPRI) ,
- evaluation (Commissioner of the Environment and Sustainable Development/CESD 2018 toxics audit follow-up & performance measurement),
- nanomaterials,
- CMP post-2020 update,
- "vulnerable populations" framework,
- Canada's plastics science agenda (CaPSA),
- "green chemistry", and
- wastewater monitoring.

It was followed by a one-day facilitated "multi-stakeholder" meeting with the following topic presentations (some repeats from the SAC meeting) and discussions:

- Canada's plastics science agenda (CaPSA) - research and monitoring plan,
- post-2020 "brief-out & next steps",
- post-2020 "occupational exposure", and
- evaluation (Commissioner of the Environment and Sustainable Development/CESD 2018 toxics audit follow-up & performance measurement).

What follows are reflections about the meetings in general, and comments about some of their content. Since this was my first meeting as a SAC member -- the appointment was made shortly before the meeting -- I am more focused in this report on process than content. Other SAC members and observers associated with the Canadian Network for Human Health and the Environment (CNHHE) prepared reports that include important recommendations and information.

Preparation

While the support staff, in particular, were very helpful about logistics, I was not properly prepared for this first meeting. Lessons include:

- ❑ make appointments and arrangements in time for new members to participate in pre-meeting phone calls and Webex conversations (I missed the one on May 2nd, although I was sent the materials on May 3);
- ❑ ensure that new SAC members get background information about the agenda items (e.g., previous meeting notes, presentations and hand-outs, reference documents or links);
- ❑ make paper copies of presentations available (it's a cognitive ergonomic hazard to have to read them on a laptop, note-making is difficult on a laptop, and it's outsourcing of printing costs, particularly to members without organisational printer access);
- ❑ ensure new SAC members get multi-stakeholder meeting agendas and "decks" before the meeting (no one at the "front desk" knew I was coming, even though I'd said so);
- ❑ send notes and previous presentations from the last few sets of both meetings (even if the topics aren't on the agenda);
- ❑ have an appropriate government representative discuss the agenda items for both meetings personally with the new member, to ascertain what background materials they need and are up-to-speed about relevant past discussions;
- ❑ cover the time involved for another non-industry representative to brief the new member about the process and past meetings; and
- ❑ explain what notes will be made available to SAC members and others, given all the note-taking at the meeting.

Without background materials, I was not sufficiently prepared for some discussions. That made it difficult to request feedback from CARWH members or others who might have been helpful. The use of acronyms and jargon at the meeting complicated understanding presentations, discussions and situations.

The meetings' formats

The SAC meetings are essentially run as presentations -- all but one by government staff at these meetings -- to which representatives around the table react in a rota determined by who puts their hand up first. The presenters end with "charge questions" for which there are limited time frames to respond. Almost every presentation at both meetings needed much more in-depth conversation -- not statements, which we essentially were forced to make.

Those who brought up fundamental -- as in going to the root of -- points or questions, rarely got meaningful acknowledgements or responses from government representatives and little from industry representatives. For example, Dr. Don Spady's points about where ethics and climate change fit in SAC conversations had to be taken up by other non-industry SAC members. He noted later that such philosophical questions don't seem to fit the meeting format, although they need to be on the agenda. (His recent e-mail to all SAC members and CMP programme officials asked that this happen, with proposed questions and lots of references about the coming calamity of climate change.)

Observers sat silently at the back of the room. None were called upon for clarification or input, other than government staff. CNHHE observers and others had no opportunity to ask questions or interject helpful comments. This makes little sense; they should be able to contribute to the discussions, especially when the topic is one they know well.

At the same time, the format allowed some industry representatives to make inaccurate or inflammatory statements without others being able to interject with corrections or requests for clarification. It is unclear if the meeting record treats those statements as true and or if there is any fact-checking. NGO reps exercised extreme politeness in the face of several challenging statements that made all kinds of assumptions contrary to their principles and facts.

The same thing happened at the multi-stakeholder meeting, where an industry representative made some untrue statements about occupational exposure limits (OELs). As the only occupational hygienist in the room, I may have appreciated the inaccuracies more than others, but there was no opportunity to get corrections on the record or to challenge what he said. In this case, it was complicated by a lack of history amongst everyone else in the room about efforts in the 1990s to reform how OELs are set in several Canadian jurisdictions. I was able to mention the latter in a report-back, and offer documentation from those efforts (which no one has yet requested).

This practice was particularly offensive in the **"green chemistry"** presentations by Dow and Chemours representative, requested and organised by industry representatives. It insulted the intelligence of anyone familiar with the topic (and others likely), essentially bragging (inaccurately) about their companies' work and ignoring important developments in the field. As a process issue, copies of the two presentations were not available beforehand, and only one was distributed.

The situation emphasised the need for a proper and informed presentation by someone like Dr. John Warner (one of the "fathers" of the topic), a Canadian academic specialising in green chemistry (e.g., Dr. Heather Buckley of University

of Victoria, Dr. Francesca Kerton of Memorial University of Newfoundland), or another knowledgeable person.

The multi-stakeholder meeting included some SAC members and observers from their meeting, as well as new faces (mostly industry representatives, including from the retail sector). The facilitator at the multi-stakeholder meeting did try to get conversations going but there was not enough mixing of the interested parties to have effective discussions that could lay the basis for conversations -- as opposed to statements -- at the SAC meetings. At the tables, we had a government recorder but no facilitator, which left participants to their own devices; sometimes this worked but not always.

Recurring themes: Workers' health, missing voices, big picture thinking, prevention and evaluation

Some industry representatives repeatedly patted the CMP on the back, saying it's a world leader in chemicals assessment and management; one advocated exporting it to other jurisdictions (perhaps another way to "harmonise").

There is lots of evidence to the contrary. Amongst other things, the auditor's report and next steps presentation (with lessons learned) said this is not so. For example, objectives and vision aren't clear, performance measurements are missing, and the plan's policy excludes workers' health, leading to "not toxic under CEPA" assessments that do not protect all Canadians. Basic questions about the effectiveness of the government's chemical management activities -- including enforcement -- aren't asked, and can't be answered.

"What about the workers?" was my frequent response to presentations or questions in the SAC meeting. (I wasn't alone in bringing up the question.) It often was tied in to public health approaches, right-to-know, and effective prevention and protections for all. The question needs to be asked as the CMP staff determine how they will integrate occupational health into post-2020 plans, and how they deal with it now. It's part of a life cycle analysis approach (although there clearly are different understandings around the table about what that means) and relates to accepted social determinants of health.

From an occupational health perspective, the presentations often missed consideration of workers' health, occupational health resources, and effective transparency/ right-to-know, and their integration into CMP and CEPA-related activities. NGO reps also talked big picture thinking based on ethical values with integrated systems that effectively protect all Canadians -- Indigenous peoples, workers, "consumers" and "vulnerable populations". Climate change was the context for many comments.

The emphasis on "risk" in the CMP makes it difficult to understand how the proposed changes around occupational hazards, "vulnerable populations", informed substitution and green chemistry initiatives will be considered and/or used in the post-2020 plan. It also diminishes the importance of climate change and the short time line our governments, industries, and other sectors have to take effective action to prevent and reduce its effects.

The current siloes also matter. They separate those who care about and work on climate change, public health, and toxic chemicals, whether the latter are issues in their homes, communities, general environment or jobs. Silo-busting (a term used by another SAC member) is required. So too is the fundamental question that others also raised (related to how CEPA will operate in a world with serious climate change): do we need this chemical or product? It is the green chemistry question linked to informed substitution and alternatives assessment (not mentioned in the companies' presentations). We also need hazard surveillance that helps connect the presence of toxic chemicals to where they are found in jobs and products.

I recommended green chemists, occupational hygienists, CARWH and other occupational health-related organisations as resources for the questions posed and issues discussed. I also pointed out that missing voices around the table also included unions and workers' centres that have the grassroots connections like those of ENGOs, experience dealing with the topics, and are interested parties in other discussions about hazardous chemicals. If "stakeholder engagement" is one of the CMP principles, the government needs to hear from those missing voices and others (e.g., more Indigenous organisations) who have a stake in how chemicals are managed in this country.

Occupational exposure limits

Health Canada officials did a presentation at the multi-stakeholder meeting about the department's consultations for "an integrated strategy for the protection of Canadian workers from exposure to chemicals". The emphasis was on occupational exposure limits and working with provincial and territorial authorities to harmonise them across the country. They also spoke about provincial health and safety regulators not having a way to influence government "research and monitoring projects to protect Canadian workers", and the problems with data sheets (e.g., no national source of classification, inaccuracies). They did not talk about what research is done around occupational health or how it is currently used.

OELs really only limit harm and are not linked to primary prevention efforts such as informed substitution (required by law in some way by British Columbia, Québec and federally). There also was no information (or knowledge?) about previous efforts (in Ontario, British Columbia and federally) to leave behind

Threshold Limit Values (TLVs), look elsewhere for guidance about OELs and to establish standard-setting processes that include worker participation.

Collaborations and conversations about workers' health must go beyond OELs, data sheets, and hazard assessments to include informed substitution and alternatives assessments. Data collection, the effects of toxic chemicals on workers, and informed substitution demonstration projects are of interest to CARWH members, unions, workers' centres, occupational hygienists, injured workers organisations, and others who research and work in occupational health arenas. Their voices are missing from the current discussion (although the Health Canada reps said they had done a similar presentation to the Canadian Labour Congress Health, Safety and Environment Committee the day before).

Finally, this topic should have been presented to the SAC, as it is part of the post-2020 plans for the CMP and has been discussed at other meetings.

Asbestos

In the introductions, Christina Paradiso talked about attending international meetings, including the Rotterdam Convention. Since she didn't mention it, I asked what the government did about the proposal to add chrysotile asbestos to the list of substances subject to mandatory trade regulations. She responded that, since a few countries said they were not willing to agree -- although the Canadian government said it (finally) supported listing chrysotile -- with a consensus process, the proposal was not accepted, again.

CMP Report
Cassie Barker, WHEN

Vulnerable Populations:
If vulnerable populations are to be properly protected, CMP will need to adjust its assessments with lowered exposure thresholds for communities with high body burdens and specific critical exposure risks, and improve its pollution prevention plans to mitigate further damages to populations of concern.

We must use geographic pollution data (NPRI, Northern Contaminants, 'hotspots' monitoring and industry-held data in regions such as Chemical Valley, etc) to influence pollution prevention plans. CMP influences NPRI (e.g de-listing substances), but how does NPRI's geographic data inform VP-informed CMP risk management?

Health impacts could inform thresholds and plans going forward, and should form the basis of any performance measurement for the program. Key Performance Indicators for the CMP could include incidence rates of aggressive subtypes of uterine cancer:
https://www.sciencedaily.com/releases/2019/05/190522162721.htm
(reference from Bev Thorpe)

Post-2020:
There an opportunity in post-2020 to improve the voluntary nature of the new substances application process, to compel mandatory disclosure of industry's research, actuarial data and business risk analyses that inform our understanding of hazards to specific populations.

Plastics:
We failed to really capture the depth of damage that microplastics and nanoplastics are having. How much plastic is leaked into the environment - there is no standard/measurable way to capture numbers on how much plastic is entering aquatic and land environments.

There are different terms being applied here - single-use, non-recyclable, etc - which is sure to create plenty of confusion and loopholes for manufacturers.
Additional funding will need to be provided for research in the recognized gaps.

Where does Health Canada / food safety policies get included, because as seen in the "Top twelve most collected items in Canadian shoreline clean-ups, 2018", most of the items are related to food.

Extended product warranties (e.g. UK is 6 years), and right-to-repair offer us specific policy tools to push back against the linear economy and designed obsolescence.

Chemical recycling is highlighted in the plan, yet it presents a wealth of issues for recycled plastics contamination. Mechanical recycling can do a better job of protecting against contamination of fire-retardants and other risks.

Green Chemistry:
This marketing pitch / propaganda from Dow was a travesty, and a waste of this Committee's time. If an NGO gave an unreferenced presentation such as this, there would be an outcry from industry stakeholders and likely consequences - I hope to hear that this will be the case for this gross oversimplification of innovation and opportunity.

REPORT ON CHEMICALS MANAGEMENT PLAN
Meetings of the Stakeholder Advisory Council and Multi-Stakeholder Meeting
May 21 – 24, 2019 Ottawa, Ontario

Report by Sheila Cole Environment and Health Expert and CHNNE (Representative for the NSEN)

These three and a half days of meetings involved presentations on several topics. I have concentrated on the topics of highest interest to me in relation to my areas of work and expertise.

NPRI

Knowledge regarding the National Pollutant Release Inventory (NPRI) needs to be increased across Canada. At the moment, this consists mostly of dissemination of information out, and reliance on people finding their way inside a very complex and technical website.
In general, it would be best for Canadians to have NPRI data interpreted for them and circulated through common media. It is important for Canadians to know the rich knowledge available on the site such as which pollutants are decreasing, where they are increasing, what the most common sources are, etc. These are the kinds of important information that may not be readily grasped and interpreted by the public as they navigate the site, trying to make sense of graphs and charts. The media would be more inclined to print stories related to the CMP and the NPRI if this information is provided in interesting and accessible news releases.

There has been some outreach to spread knowledge of the NPRI and help people to learn how to use the site, but that outreach is very NCR concentrated. After that the outreach has been mostly within Ontario and Quebec. In the meantime, knowledge about the program is badly needed in the regions.

NPRI program and outreach developers are missing the target by focussing on the general public and youth. They should, instead be working with municipalities, groups and communities, especially in hotspot areas. Communities need a mechanism to get direct help with such things as information and analysis. They need a number to call for help... a Help Line. The program could train people as technicians who would work at the provincial or regional level. These technicians could then be the help on the ground for groups, communities and individuals who need help addressing sources of pollutants, mitigation of pollutants and overall reduction of pollutants in their own neighborhoods.

How are individual Canadians supposed to navigate the NPRI website and make some sense of it, when even technically experienced people in industry, academia and the NGO community struggle with it. I have noticed that within the whole multi - stakeholder community it is those with a background in engineering, mathematics etc. who have the greatest ease with accessing and interpreting the NPRI data. In order to raise its profile, the NPRI needs a public relations injection. It is a very rich but unfortunately highly underutilized resource because it is a very complicated index and simply not easily accessed or understood.

BPA

Bisphenal A (BPA)was discussed as a success story in terms of its having been removed, most notably, from the plastics in infant baby bottles. Perhaps this success would be merited if the substitute chemical were not also toxic. In this regard, the public has been mislead. They think that anything which is

marketed as being BPA free is therefore not toxic. It is important to remember that Canadians expect the government of Canada to protect them from toxics.
In this instance, Canadians are being misinformed, while the program celebrates a success. The public is now buying products like BPA free, reusable drinking containers to carry their water, thinking that the container is safe. Stores that market these products also feel confident that they are offering a healthy product to their customers.

NANOMATERIALS

Nano materials are being developed at a very fast pace with the intention of broad usage in products. While this field is developing rapidly, there are a few current checks and balances to ensure that these materials are safe for human health and the environment. The development of the materials and usages is swift, yet governments response is, typically, slow and measured. This raises obvious concern that if there are problems arising, how do these materials get removed from the market place before extreme damage occurs. It's already too late to address these issues in the products that are already utilizing nano materials and already circulating in the marketplace. One example of this, is the current useage in cosmetics and personal care products. Who, if anyone, is tracking the range of their usage and the impact on individuals using these products and also their environmental impacts?
As Barbara McKinnon aptly commented "There are unknown unknowns"!

While the broad range of work being done internationally on nano materials is encouraging, the field is left wide open for data gaps that could have serious implications for both human health and the environment.

VULNERABLE POPULATIONS - MCS

It is encouraging that the Chemicals Management Plan (CMP) has undertaken to focus on Vulnerable Populations VPs). One such population is those with Multiple Chemical Sensitivities (MCS). It is critically important that this group be included, in writing, in the list of VPs, along with infants, expectant mothers, the elderly, etc.
In terms of chemical exposure, this group has long been referred to as "Canaries", for very obvious reasons. Yet, to date, few people and institutions have followed their warning. This is the group that the CMP should be paying closer attention to, as a means of data collection, and importantly to understand, address and to deal with the reality of the ugly cumulative impact that chemicals are having on humans, in particular, those suffering from MCS.

The medical specialty known as Environmental Medicine has been established for several decades now, and hundreds of physicians have been trained in the specialty.
It would be an excellent and most appropriate idea to have an Environmental Medicine Specialist sitting as a member of the Stakeholder Advisory Committee (SAC). They could speak with first hand knowledge on the rising impact of chemicals on human health and the way chemically related diseases are affecting the human body. There is one such specialist in Ottawa, namely Dr. Jennifer Armstrong. Dr. John Molot is nearby in Toronto. Either of these physicians would be a huge asset to the Program.
Many books have been published on this subject by well known physicians, such as: Dr. Sherry Rogers, and Dr. Claudia Miller (together with her research partner, Nicholas Ashford,Phd.). Dr. Samuel Epstein's book The Politics of Cancer is also a compelling reference on the impact of chemicals on health. Many

more books can be found on this subject. The scientific literature is well established, rich, plentiful, aurhoritative, and continually being updated.

Children with multiple chemical sensitivities often have behaviour problems and learning disabilities. All people with MCS have issues of accessibility related to public buildings, workplaces, hospitals, schools. recreation facilities, etc. Common exposures include: strong cleaning substances, people wearing scented products, and offgassing from building materials, flooring, furnishings, etc. Adults with MCS have difficulty holding down jobs to support their families and caring for their children due to this extremely disabling condition. With respect to disability it must be noted that MCS is recognized by the Canadian Human Rights Commission. It is time that the CMP boldly steps forth to recognize and embrace this very real and disabling disease that is undeniably connected squarely to chemical exposure.

INTERNATIONAL CHEMICALS MANAGEMENT - SOUNDING THE ALARM

Canada is very well respected internationally for the work it has done on chemicals through our highly respected Chemicals Management Plan. Our country works closely harmonizing our chemicals management with the United States, Mexico, the European Union, Japan, China and other countries around the globe. Also Canada is engaged in helping many countries who do not have such a plan to establish their own chemicals management plans, using the CMP as a model.

But there is an aspect to international chemical management discussions that is not being fully embraced. That is the GLOBAL REDUCTION of CHEMICALS PRODUCTION. None of the larger bodies such as the OECD or the WHO, for example, has advanced this topic as an area needing immediate attention. There are some 130 million chemicals now in the global registry. The value of the global chemical industry exceeded 5 trillion dollars in 2017. The international production of chemicals is slated to double by 2030. China alone is expected to contribute half of the volume to that estimate. There is much talk of various means of minimizing adverse impacts of these chemicals and wastes, and reducing the risks of some chemicals and wastes. Also much work is being advanced in the field of green chemistry. Yet,no coordinating body is calling for an overall reduction in the production of chemicals.

In the meantime, diseases of the central nervous system, many different cancers, childhood asthma, autism, and other diseases are continuing to spike in countries around the world. Air, soil and water in countries the world over are heavily contaminated with chemicals. Entire ecosystems are damaged and unable to deliver their vital and critically important services These are known facts. In the face of this knowledge, how can we continue to allow more and more and more chemicals to be developed and to enter into commerce. This makes no sense. Something must be done to curb the overall global production of chemicals.
Canada is very well-placed to advocate for such an initiative. I highly recommend that action is undertaken immediately to do so. Canada has the proven knowledge and capability to lead discussions and action on this growing threat to the environment and to the very survival of humans and other living things.

PLASTIC USE and DISPOSAL

Canada’s new initiative to promote zero plastic waste is an excellent one.

There are many very good ideas already in discussion to increase recycling of plastics: eliminating single use plastics, and reducing excess packaging in the food industry and in consumer products in general. It was noted in one of the presentations that the hierarchy of prevention begins with elimination, banning and informed substitution. In terms of elimination, one of the obvious places that plastics can be reduced is by banning the use of plastic bags in stores.

In Halifax, Nova Scotia the Atlantic Superstore on Quinpool Road has already completed a 10 year pilot study on diversion of plastic bags from landfills. This was done by banning the use of plastic shopping bags in that store. It has been a successful experiment and worth attention as a model study in Canada.

Usually the store would use 36 cases of bags annually. Each case contains 1000 bags, at a cost of $1200.00 per month. Over the ten year period this would have added up to 4320 cases of bags. That translates to 4,320,000 bags having been diverted from landfills. In addition to diversion of plastics,this represented a cost savings to the store of $156,000. This Superstore contines to permanently ban the use of plastic shopping bags.

The store manager also noted that the store is anxiously awaiting the reduction of plastics use through reducing of excess packaging in food products supplied to the store.
In addition to the reduction of excess packaging in food products, there should also be a reduction in the use of plastic vats and jugs of various designs that hold larger quantities of food for restaurants, cafeterias,hospitals and other institutions. This would help to reduce the level of microplastics currently consumed by humans.

****

Meeting Report

Observations Regarding
Chemicals Management Plan Stakeholder Advisory Committee Meetings
and
Multi-Stakeholder Meeting

Ottawa
May 22-24, 2019

Meg Sears PhD
Prevent Cancer Now

I was pleased to have the opportunity to attend the Chemical Management Plan meetings, as an observer selected by the Canadian Network for Human Health and the Environment.

These observations were largely neither shared nor discussed with stakeholders during the meeting. The chairs did not exercise their discretion to permit observers to speak, and the suggestion to liaise during lunch was thwarted by instructions that lunch was provided only for Stakeholders. Several Observers (and government representatives) sought lunch elsewhere. Thus, I would be grateful for responses to the following comments.

These notes do not summarize entire presentations, but highlight a number of what I consider to be the most pressing points on Agenda items.

National Pollutant Release Inventory (NPRI) – illustration of serious problems with Canadian data and resulting under-performance of pollution prevention

I have used the NPRI data numerous times, to examine emissions from large facilities such as pulp mills and other industrial facilities, as well as smaller companies. It can be complemented by mirror legislation which addresses occupational exposures, and facilitates substitution and reduction of chemicals, such as *Ontario's Toxic Use Reduction Act* (most unfortunately, this is slated to end under the current Ontario government).

Limitations of the NPRI data were vividly illustrated by the large increase in measured toxic substances, following lowering of reporting thresholds. Under-estimation of quantities in the environment leads to under-estimation of exposure and risk. This in turn delays actions to curb chemical exposures. This also means that we do not have reliable historical pollution data for research and ongoing performance measurement. Canada should meet or exceed the best practices globally.

The NPRI could be much more valuable for performance measurement and research with an expanded list of reportable substances, and lower thresholds consistent with best practices in other jurisdictions. PCN addressed this in our submission to the Parliamentary Standing Committee regarding *Canadian Environmental Protection Act* (CEPA) reform.[1] The CANUE research initiative has captured some NPRI air data, but its use for studies of human or

environmental health is limited by infrequent reporting, the limited suites of chemicals that must be reported.

Problems and limitation associated with high reporting limits are similar to those associated with high detection limits in other exposure information relevant to the CMP. Surveys, such as the Canadian Health Measures Survey, tend to have high detection limits / limits of quantitation, and these limits are not always comparable across a chemical group. For example numbers of detections were used for exposure assessment regarding phthalates,[2] despite the fact that detection limits were different, for various phthalates. The frequency of detections correlated inversely with the detection limit but this data was inappropriately used to inform the risks of various phthalate chemicals. In this light, the basis for risk comparisons across this chemical is fundamentally flawed. Canadians of all ages and stages, including workers, are all exposed to these ubiquitous endocrine disrupting chemicals.

Thresholds for reporting, and detection limits, must be transparently reported alongside all data, and the data must be used appropriately. No statistician would be happy with assumptions that non-detects equate to zero, and appropriate, precautionary methods should be transparently applied in assessments. Analyses of frequency of detection require complementary analyses of data quality including sensitivity. For example, this could quite probably have resulted in different conclusions with respect to phthalates. Generally, under-detection of pollution (under-estimation of exposure) will result in insufficiently protective decision-making in risk-based regulatory frameworks. This is one of several cases in which the only practical, sound basis for decision-making is hazard.

Plastics

Thank you for the substantial, if dismal report on Canada's poor reuse and recycling of plastics. The necessary framework for plastics is "cradle to cradle" for reuse and remanufacturing of these materials. "Energy recovery" from plastics is fallacious, as the pollution and embodied energy of these substances dwarf any energy that may be generated from waste. Incinerators are built to size, and must be "fed" to scale, so represent substantial disincentives to reducing, reusing and recycling plastics. Incinerators should be actively dissuaded based upon exergy analyses as done by NRCan.

Missing, but not to be forgotten are micro- and nano-plastics, in waste-water, sludge, waterways and sediments, and compost materials (particularly from municipal and industrial composting). These result from washing of synthetic fabrics, manufactured particles, and breaking up of waste plastic in the environment. Sadly,

Pragmatic first steps are to:

- Track reductions in total plastics and incentivize:
    - Durable goods / re-usable items;
    - Use of single-material readily remanufactured plastic items (e.g., polyethylene and polypropylene), along with their collection, repurposing and remanufacturing.
- Strongly discourage:

    - Styrene (particularly expanded polystyrene / Styrofoam), polyvinyl chloride and "other" materials;
    - Use of plastics that require additives for softening, stabilization or coating;
    - Destructive processing of plastics. I recommend that the government adopt the Zero Waste Canada framework,[3] that highlights that destruction is unacceptable;
        - These materials already embody very high greenhouse gas equivalents through resource extraction, manufacturing, transportation, etc.
        - Incinerators are sized to be "fed" and undermine or thwart reduction of primary plastics, reuse and re-manufacturing.
        - The multi-stakeholder meeting summary of *Global Supply Chains, Chemicals In Products And Circularity* includes "energy recovery" from plastics. In contrast with energy, most of the "exergy" associated with plastics is associated with creating the chemical, and thermodynamically it is misleading to recommend significant "energy recovery."
- Address contamination of plastics with toxic flame retardants and other additives (e.g., stabilizers) by requiring functional substitution, such as metal cases for electronics;
- Substitution of plastics must be substantially safer. The debacle of BPA should never be repeated:
    - BPA-free may be hazardous and pose risks if, for example, the substitute is BPS or other analogues.
    - A very sensitive exposure window is *in utero* but pregnant workers may still work in canning industries with high exposures.

How might this occur under the CMP? Canada has declared a climate emergency, and to address this we must shift how we make choices. Choices made on our behalf by regulators under CEPA must recognize this emergency, as well as their authority given that carbon dioxide is listed as CEPA toxic.

Substitution. Expertise in truly better substitution should be convened, to draft a framework for climate-friendly, least-toxic decision-making, and methods for necessary analyses. For example, exergy thermodynamic analyses are conducted by NRCan, to identify the most energy-efficient options. Under such an analysis, for instance, incineration of plastic would be quantified as a poor option. Substitution has been discussed previously by SAC, the government has consulted on this, and we hope that you will review *Prevent Cancer Now's* substantial comments.[4]

Nanomaterials

Nanomaterials cannot be assessed according to traditional methods, and large data gaps exist. The public expects that substances that are approved for commerce have been scrutinized, but apparently nano materials are getting a pass. It would be good to verify that the alleged rarity of new substances notifications reflects reality, and Health Canada should ensure that it is aware of other organizations activities (e.g., Greenscreen, EU).

From one perspective nanomaterials can be divided into those that will dissolve or react chemically so are not persistent, and those that are persistent. Asbestos is the most famous

persistent nanomaterial. Silica dust is similar. Persistent particles that migrate into tissues cause inflammation, dysfunction and cancers. Materials that will not remain in their nano form over the long term offer inherent health and environmental advantages. For this reason, zinc oxide is preferable to titanium dioxide in sunscreens, and on that basis should be the one, single sunscreen chemical in Canadians' sunscreens (aside: organic UV filters are expected to be and are increasingly proven to be endocrine disrupting chemicals). Persistent nanomaterials should be scrutinized carefully as to "essentiality," potential substitutes and the likelihood that they will be released as products are used or age.

Nano forms of substances should be assumed to migrate through tissues and pose potential long term risks if they persist in tissues. In addition to toxicity of the bulk material, persistence / fate is an important consideration for nanomaterials.

The mobility and inherent differences in reactivity of nano materials mean that there are unknown unknowns regarding toxicities and environmental fate. This requires a more stringent "essentiality" filter for nano forms of materials; particularly ones with coatings or that are intended for unique chemical features.

Wastewater

What we put in and on our food, in and on our bodies, and on urban environments, can end up in wastewater (including storm water). Monitoring waste and biosolids content with much greater rigour could be an important tool for risk identification, performance measurement and early signals requiring additional actions. Yes, clearly waste water treatment cannot and does not clear all anthropogenic chemicals, and sewer use (by)laws should be strengthened and supported.

Consequences of sewage solids disposal on lands merit careful, detailed consideration during chemicals assessment.

The possibilities that extreme weather will cause discharges of untreated wastes into waterways should also reduce our risk tolerance for pollutants in wastewater.

In sum, these downstream (literally and figuratively) consequences highlight the importance of monitoring and transparency for after-the-fact verification that risks truly are acceptable. Moving ahead, pragmatic approaches will reduce toxicants at the source, by regulating to achieve least-toxic options for "needs" (not all "wants") of society.

Industry presentations regarding green chemistry

I continue to be disappointed with the industry sponsored presentations at SAC. This was not in fact green chemistry. Certainly "green chemistry" is a large, multi-faceted topic, but it would be preferable to have this fulsomely addressed by expert academics rather than a vested interest. In reality, this was a sales pitch.
Definition and working model is needed for "green chemistry" and to move forward.

- Bev Thorpe, an observer, is an expert on this topic. It would have been beneficial to have her input.
- Academics would be expected to provide a more fulsome, independent overview.
- It would also be helpful to have fact-checking on comments such as the statement by Mr. Scott Thurlow regarding the value of a new refrigerant. This molecule has two rather then the more common single carbon atom, and is still halogenated, so the weight-based observations were not only trivial in the grand scheme of things, any advantage would have been much less on a molar basis. Several other inaccurate statements were made during the meeting by industry stakeholders.

Similar to the present inadequate, inappropriate presentation, an industry presentation at a previous meeting, promoted a very large halogenated molecule to be a flame retardant, but did not address environmental breakdown. That would result in the same problems as are seen today. Persistent organic chemicals (particularly halogenated ones) will never be a solution for to a healthy environment.

Vulnerable populations

I have researched and presented to some of the Health Canada and ECCC staff regarding increases in chronic diseases in Canada, particularly among younger populations. Increasing cancers, birth defects, neurodevelopmental harms, and metabolic abnormalities suggest strongly that endocrine disrupting chemicals are implicated in these conditions. Declines in population health are also "proof of the pudding," as noted by the Commissioner for the Environment and Sustainable Development, that the CMP is not resulting in healthier Canadians. In February 2019, again, acute myeloid leukemia associated with Canadian pollution "hotspots," was described in a study in the journal Cancer.[5]

I offer to update this material with the most recent research, and to present at an upcoming SAC meeting. It may be a helpful counter-point to the industry-sponsored presentations during the last meeting.

These populations, outcomes, and co- and cumulative exposures and should be identified in the course of hazard assessments, to ensure that sufficiently protective measures are taken in the course of risk management.

Post-2020 future of the Chemicals Management Plan

The first presentation to the multi-stakeholder meeting surprisingly listed items not normally covered at CMP meetings, including pesticides and genetically modified organisms (GMOs). It would be helpful to report on how Canadian measures align with international commitments and decisions made in other jurisdictions (including best practices). As a stakeholder with substantial experience with these topics, I cannot agree that Canadians' health and environment are sufficiently protected with these initiatives. For example, Health Canada and PHAC have not examined the role of environmental exposures such as the herbicide (also antibiotic and chelator) glyphosate in aetiology of inflammatory bowel disease (increasing 7% annually in

children under 6 years of age [6]), and colorectal cancer (increasing at the same rate in adolescents and young adults 15-29 years [7]). During the year and a half to formulate the government response government scientists did not identify recent research that strengthened concerns identified in the numerous objections.

The "need" for GMO corn (MON 87429, current consultation) that is resistant to *six* herbicides speaks volumes regarding the failure of this agricultural model, in the losing race against weed resistance.

Carcinogenic insecticides such as chlorpyrifos and other organophosphates continue to be registered (and clorpyrifos is proposed for continuing registration for community uses - PRVD2019-05). There is considerable room for improvement.

Chemicals management during a climate emergency

Finally, I would like to agree with the representative of the Canadian Paediatric Society, Dr. Don Spady, on the essential need to cut back substantially on chemicals in commerce. Continued exponential growth in chemicals production is not consistent with continuing civilization. The climate and our ecosystems are over-stressed by excessive extraction, manufacture, importation, use and disposal of chemicals and products, dispersal of toxicants in wastes and recycled goods (e.g., flame retardants in fish from industrial sources and waste, and in consumer products from recycled plastics), increased mobilization of "legacy" chemicals from ecological reservoirs such as sediments, etc. with climate extremes, and so on. This pollution and associated climate crisis pose existential threats to civilization, and indeed, humankind. It is fallacious during an emergency to engage in inaction based on niceties of working in a multi-stakeholder context. We all share the air and the climate, have relatives, and have a life-or-death stake in a liveable world. I believe that within the context of "substitution" there is room for the CMP to ratchet down the ecological footprint of Canadians, and hope that the SAC will congeal to do what is necessary and possible within the context of the CMP.

In summary, thank you for the opportunity to attend the CMP meetings. I look forward to responses to these concerns regarding materials discussed, and my offer to present at an upcoming CMP meeting. Please do not hesitate to reach out, with questions, or for clarification, further information or discussion. At the end of the day, we all want a better world for our families, children and grandchildren.

Sincerely,

Meg Sears

Meg Sears PhD
Chair, Prevent Cancer Now
613 832-2806
613 297-6042 (cell phone)
Meg@PreventCancerNow.ca
www.PreventCancerNow.ca

References

1. Prevent Cancer Now, Chemical Sensitivities Manitoba, National Network on Environments and Women's Health. Submission to the Standing Committee on Environment and Sustainable Development Re. Canadian Environmental Protection Act (CEPA) Review. Controlling Toxic Substances [Internet]. 2016 [cited 2017 Mar 20]. Available from: http://www.preventcancernow.ca/wp-content/uploads/2016/12/CEPA-PCN-MCM-NNEWH-2016Dec1.pdf

2. Prevent Cancer Now, Chemical Sensitivities Manitoba. Response to consultation document – Draft Screening Assessment of a Phthalate Substance Grouping -Canada Gazette, Part 1: Vol. 151, No. 40, October 7, 2017 [Internet]. 2017 [cited 2019 Mar 18]. Available from: http://www.preventcancernow.ca/wp-content/uploads/2017/12/Phthalates-PCN-Submission.pdf

3. Zero Waste Canada. Zero Waste Hierarchy [Internet]. 2018 [cited 2019 Jun 24]. Available from: https://zerowastecanada.ca/zero-waste-hierarchy/

4. Prevent Cancer Now. Informed substitution within Canada's chemicals management plan. Feedback, and recommendations for rapid progress to healthiest alternatives [Internet]. 2019. Available from: http://www.preventcancernow.ca/wp-content/uploads/PCN-InformedSubstitutionSubmission.pdf

5. Ghazawi FM, Le M, Cyr J, Netchiporouk E, Rahme E, Alakel A, et al. Analysis of acute myeloid leukemia incidence and geographic distribution in Canada from 1992 to 2010 reveals disease clusters in Sarnia and other industrial US border cities in Ontario. Cancer. 2019 Jun;125(11):1886–97.

6. Benchimol EI, Bernstein CN, Bitton A, Carroll MW, Singh H, Otley AR, et al. Trends in Epidemiology of Pediatric Inflammatory Bowel Disease in Canada: Distributed Network Analysis of Multiple Population-Based Provincial Health Administrative Databases. Am J Gastroenterol. 2017 Jul;112(7):1120–34.

7. Patel P, De P. Trends in colorectal cancer incidence and related lifestyle risk factors in 15-49-year-olds in Canada, 1969-2010. Cancer Epidemiology. 2016 Jun 1;42(Supplement C):90–100.

Chemicals Management Plan – Multi-Stakeholder Workshop

Comments

Date: May 24, 2019
Name: Carroll Chubb (She listened to the webcast.)
Organizations: CNHHE and Saskatchewan Environmental Society
Note: These comments are the views of Dr. Chubb, and may not be those of the organizations with which she is associated.

General Comment: The presentations were useful and interesting.

Session Title: Plastics (CAPSA)

Regarding Theme 5 (Waste Diversion and Recovery),
an organization in Saskatchewan with expertise is:

Saskatchewan Waste Reduction Council

Session Title: Post 2020 Occupational Exposure

Question: Which proposed initiative do you see as being the most important for protecting workers from exposure to chemicals?

These are the 8 proposed initiatives:

1) Data sharing and Prioritization
2) Occupational exposure limit (OEL) development
3) Research and Monitoring
4) Risk Assessment and Information gathering
5) Risk management
6) Strengthen science-based hazard classification
7) Increase awareness
8) Increase compliance and enforcement under Hazardous Products Act

It seems to me that all of these initiatives are important. When allocating resources for these initiatives, consideration should be given to what would be most likely to benefit health.

Session Title: Commissioner of the Environment and Sustainable Development 2018 Toxics Audit Follow-up & Performance Measurement

I agree with the comments made during the workshop by two people (Meg Sears and Don Spady) that Health Canada should investigate the causes of adverse trends in the health of Canadians, such as increases in particular types of cancer in children. If there is reason to suspect environmental causes, then Health Canada should try to determine what environmental factors are causes of the problem.

All Sessions: Confidential business information practices should not be allowed to interfere with monitoring exposure to chemical substances or with appropriate reuse and disposal. Canada and other countries should move toward treating the chemical composition or ingredients in products in the same way food ingredients are treated. The chemical composition or ingredients should be publicly available information. This information could be available on a website. For workers, more details on the composition of the materials with which they work is needed on the information sheets.

Chemicals Management Plan Stakeholder Advisory Council May 22-24, 2019

Notes and observations by Bev Thorpe
Consultant at Clean Production Action
www.cleanproduction.org
bev@cleanproduction.org

1. International Conventions. It is well known that Canada partakes in Stockholm, Basel, SAICM and other international conventions - which is great. It would be useful to know how Canada votes on issues raised in these international conventions. Do we support full phase out of designated chemicals of concern or do we promote long term exemptions, and if so, why? It is good that Canada supported a ban on asbestos in the recent Rotterdam Convention meeting. A summary of our actions at international conventions would be useful.

2. CMP value and benefits – a report is being drafted this summer. What metrics will be used? This issue came up many times in the 3 day meeting around the theme of 'are we asking the right questions?' Specifically:--
   - How do we measure the stated goal of the CMP which is currently: "The CMP is a Government of Canada initiative aimed at reducing the risks posed by chemicals to Canadians and their environment." Will we revisit the goal and make it more proactive? A new Goal could be to 'move our market to safer chemicals adoption, reduce health impacts associated with chemicals of high concern by increasing the adoption of inherently less hazardous chemicals , and increase transparency in products and supply chains to enable informed decision making.' Something specific along these lines would help us frame clear goals and metrics going forward.
   - Regarding the current CMP: Are we measuring a reduction in health outcomes attributed to chemicals of concern? The rate of cancer incidence in Canadians continues to climb, including children's cancer and attention deficit disorders. How is the CMP parsing out the role of toxic chemicals as contributors? For example chemicals known to cause thyroid disruption could be measured by a) quantity in use within Canada; b) product sectors most likely to have these chemicals; c) trend for quantity in use and correlation with rates of thyroid disruption observed in Canadian populations; d) assessment of pollution prevention plans and informed substitution to reduce the use of these chemicals and e) attendant tracking of thyroid disease rates to see impact of measures.
   - Are we measuring the economic costs of NOT phasing out chemicals of high concern (CoHC)? The European Union has done this for endocrine disrupting chemicals and most recently for PFAS (per and poly fluorinated alkly substances). To date I have not seen such an economic assessment in Canada.
   - Are there metrics to assess if industry is complying with regulations? Considering Canada imports products with CoHC and uses CoHC in local manufacturing processes how are we requiring reporting on the use and discharge? If there are requirements for reporting this

and monitoring data has been done, these have not been made available online or made transparent. Now that chemicals of emerging concern, such as the per and poly-fluorinated alkyl substances (PFAS) are identified, how is Canada monitoring their use and health impacts? Most recently the Federal government restricted the use of a sub-set of PFAS but this is only a fraction of PFAS in use. CMP needs to develop an action plan on the class-based approach to CoHC, including the PFAS chemical class – and make this public.

3. Strengthening a life cycle approach post 2020. As the Global Chemicals Outlook pointed out – https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/policy-and-governance/global-chemicals-outlook legacy waste problems are a big concern and we must prevent the use of CoHC in problems to prevent future hazardous waste generation. Among other implementation steps, the UNEP report advocates for Life Cycle Approaches that includes full material disclosure, transparency and sustainable product design. How will the new CMP promote this?

4. Outreach and unfunded involvement of stakeholders. ECCC and HC could better utilize the expertise of nonprofits, public health experts and communities, particularly those living near contaminated sites. The current system to nominate a few NGOs on the stakeholder advisory committees and experts is not adequately funded. Lack of funding has created low public representation and therefore public awareness. Even some of the SAC participants are unpaid volunteers. Political will needs an engaged citizenship and a range of stakeholders at the table. Nonprofits are highly efficient communicators and disseminators of knowledge as well as being internationally networked and on top of chemical policy trends. The Post 2020 program should examine funding mechanisms or at least provide matching grants to help more community groups and NGOs get active in chemicals and product policy.

5. Nanomaterials (NMs) and the issue of burden of proof to show safety. These new materials generally lack data on health and environmental impact and cannot be assessed using traditional risk assessment models based on CASRN and modelling. The 53 NMS subjected to risk based analysis using in depth data that was completed in 2017 needs to be made publicly transparent. The objective to characterize these NMs into low, medium and priority for action needs to be made publicly available, including the product categories they are used in. An observation was made by HC that 'not a lot of new substance notifications coming into Canada…not as big a problem as bulk chemicals. ' -- this statement needs to be substantiated. The issue of NMs on the market, together with untested chemicals and no demonstration of safety by the producers is an underlying deficiency in the current CMP. We continuously chase ambulances (PBDEs, PFAS, phthalates, etc.) without asking for transparent health and environmental data on these and new chemicals - such as new PFAS chemicals to replace those regulated. The European REACH process is at least moving forward on authorization and restriction with involved stakeholders. We need to be adopting a transparent requirement for fundamental data from producers prior to market.

6. Public Disclosure of chemicals in products. The CMP process has been good for categorization but weak on informed substitution, alternatives assessment and public disclosure of chemicals in products – particularly children's products. The issue of increasing harmonization with the US since many of our supply chains are integrated with US supply chains offers opportunities as well as challenges. Canada should identify the best of what is happening at state policy level to bring in more chemical policy disclosure for consumers - such as labeling of furniture with California Technical Bulletin 117-2013 Flammability Standard Requirements for Upholstered Furniture. This allows flame retardancy without the prescribed use of flame retardant chemicals and allows consumers to check products before purchase. Similarly Washington State's Children's Safe Products Act is another best practice in consumer right to know. Requirement for more disclosure should be fundamental to Post 2020 chemicals management in Canada.

7. Green chemistry Presentation

Alas, this was not a green chemistry presentation but a sales pitch by Dow and Chemours. Very frustration and disappointing. Would have liked an overview of how post 2020 there will be a) a clear definition of green chemistry and b) incentives to escalate this within the Canadian economy. Any future credible discussion of green chemistry must include downstream users of chemicals (retailers, brands), public and consumer representatives and not just chemical producers. The failure to bring in a mix of stakeholders along the product chain will continue to reinforce the perception that ECCC/HC favours consultation with the chemical industry over other voices in risk management measures.

8. Waste water treatment plants (WWTPs) hazardous chemicals and monitoring. As discussions grow around the circular economy and a focus on legacy waste, our waste treatment sites are key considerations. The good presentation on WWTPs pointed out that these facilities were not designed to deal with hazardous chemicals. Available Sewer Use bylaws do not speak to emerging issues of chemicals in products, so having a federal lead on that is important. In fact it was stated that 'provinces are dropping their focus on this'. This will become a growing issue because WWTPs are a recognized point source of PFAS contamination. Current monitoring has now been expanded to 29 PFAS but there is no public access to information about site specific monitoring data, levels of contaminants in sludge, water and air and how this may be impacting communities. Prevention at source involves clear definition of how PFAS and other CoHC are used in products. Will post 2020 planning start connecting the dots and expand public right to know?