



Effectiveness of Environmental Performance Agreements (EPAs)

Cat. No.: En4-355/2018E-PDF

ISBN: 978-0-660-28801-7

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Environmental performance agreements (agreements) have been used within Environment and Climate Change Canada (ECCC) to manage risks from selected pollutants, including substances deemed toxic, since 2001. The purpose of this report is to provide a general summary of the results and effectiveness of agreements that were completed before December 2016, and analyze various factors within the agreements that may have influenced their performance.

Last updated: February 2018

BACKGROUND OF ENVIRONMENTAL PERFORMANCE AGREEMENTS

Environmental performance agreements are voluntary, non-statutory instruments that provide increased flexibility to industry over other risk management instruments. They are one of the many risk management instruments used by ECCC to manage risks to the environment or human health from substances (others include regulations, pollution prevention planning notices, codes of practice, etc.). Environmental performance agreements are not currently an instrument under the *Canadian Environmental Protection Act, 1999* (CEPA) however they can be used as an alternative to other voluntary or non-voluntary instruments or as a complement or precursor to another instrument. They can be negotiated directly with industry, sector associations and have occasionally been developed upon the request of industry who is looking at improving its environmental performance with the assistance of ECCC and/or other departments/jurisdictions. Tables 1 and 2 in Annex 2 provides details of past signatories to agreements. Agreements may also be negotiated across a number of industry sectors, and have included those in the chemicals, transportation, metals processing, consumer products, forestry, vinyl and printing sectors.

ECCC endorsed and developed the "Policy Framework for Environmental Performance Agreements" (the Policy) in 2001, as per recommendations by the Commissioner for the Environment and Sustainable Development, outlines circumstances in which ECCC will consider entering into an agreement and sets out principles and rigorous design criteria for consideration when developing and negotiating an agreement.

The Policy established 4 guiding principles to assist in the negotiation process of an agreement.

- **Effectiveness:** an agreement must achieve measurable results
- **Credibility:** the public must have confidence in the approach and the parties' capacity to deliver on their commitments
- **Transparency and accountability:** all parties must be publicly accountable for their commitments and their performance
- **Efficiency:** agreements should be no more expensive to the parties than alternatives for equivalent results

To further ensure these principles are followed 8 design criteria were identified which should be included in an agreement:

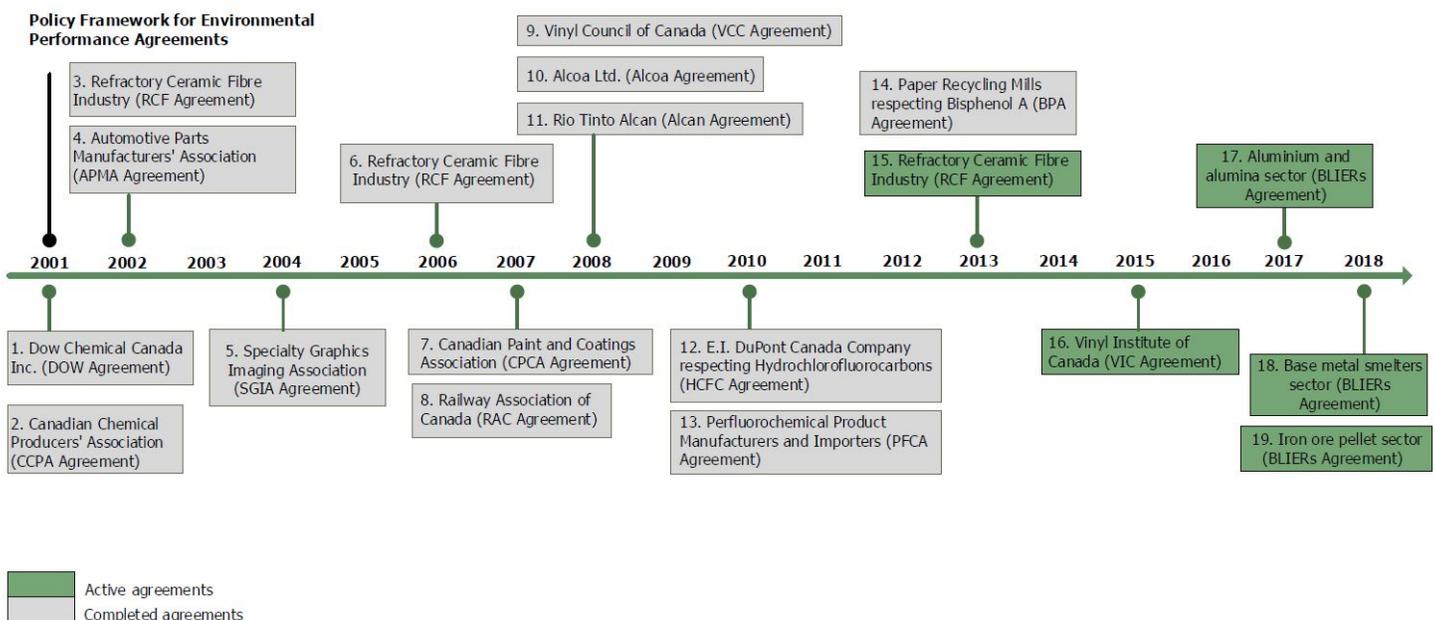
- senior-level commitment from participants
- clear environmental objectives and measurable results
- clearly defined roles and responsibilities for all signatories (including those of ECCC)
- consultation with affected and interested stakeholders
- annual public reporting on performance
- verification of results to ensure credibility and accountability
- incentives and consequences
- continual improvement through renewal of agreements

For more information on the Policy or on the main design features of agreements, please see the following links:

- [Policy Framework for Environmental Performance Agreements](#)
- [Environmental Performance Agreements – Design Features \(2013\)](#)

Since the implementation of the Policy, ECCC has successfully completed 14 agreements with industry participants. This report discusses the effectiveness of 13 of the completed agreements as one agreement had not yet analyzed their results. Figure 1 below lists all completed and active agreements that have been signed since the Policy was first implemented in 2001. For more information, Annex 1 provides a detailed list of all ongoing and completed environmental performance agreements, dates, signatories and the number of facilities/companies that had joined.

FIGURE 1: TIMELINE FOR ENVIRONMENT PERFORMANCE AGREEMENTS



OVERALL RESULTS OF COMPLETED ENVIRONMENTAL PERFORMANCE AGREEMENTS

For the purposes of this report, the 13 agreements were assessed primarily based on three of the design criteria listed in section 1 of this report:

- having clear environmental objectives and measurable results
- clearly defined roles and responsibilities for all signatories (broken down into commitments for company/facilities, ECCC and other government departments and associations)
- verification of results to ensure credibility and accountability

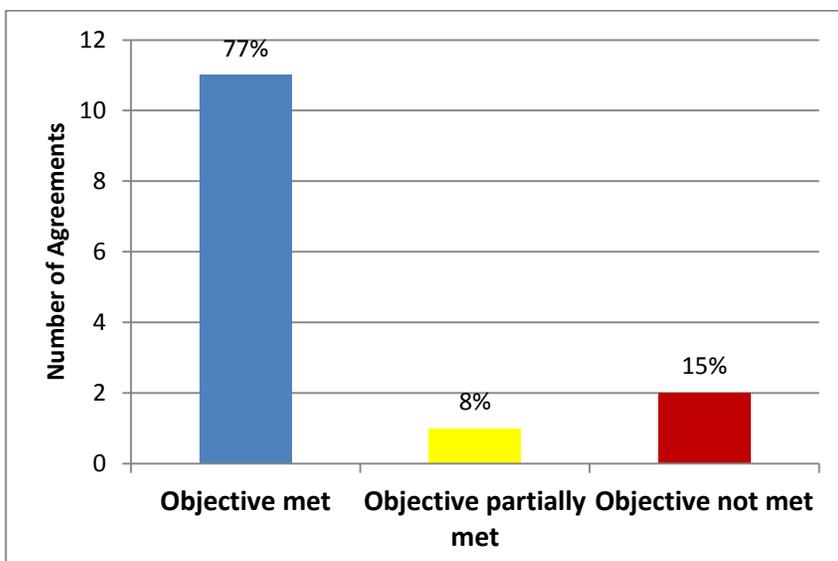
The analysis of the commitments and verification requirements as well as the participation of associations are included in an effort to determine if there were any connections between these factors and the success of an agreement.

2.1 Objectives

Although every agreement is unique, all have one or two main objective(s) related to protecting the environment or human health, as well as other commitments specific to facilities and/or other signatories to the agreement. The deadline(s) to achieve the objectives within an agreement varied, with some requiring immediate conformity with the objective upon signature of the agreement, while others required that the objectives be met by the end of the agreement or gradually with various targets as the agreement progressed.

Overall, objectives were fully met in 77% of agreements and partially met in 8% of agreements. The objectives were not met in the remaining 15% of agreements; however, these agreements still had positive impacts and results (Figure 2).

Figure 2: Overall success rate of agreement objectives



The main objectives varied across the agreements with the majority focusing on emission reductions or maintenance. The objectives of the 13 completed agreements included 6 main types, described below:

- **Limit quantity produced:** Production levels of a particular substance were capped and production was not to exceed the limit set out in the agreement. (1 agreement – the objective was successfully met)
- **Full implementation of guideline:** Signatories were to fully implement an industry developed guideline in their facilities. (1 agreement - the objective was successfully met)
- **Reduction/elimination of substance:** The use of the substance was to be slowly reduced over time until the substance was completely eliminated within the products sold in Canada (e.g. a substitution was found or the product was no longer produced). (1 agreement - the objective was successfully met)
- **Monitor and/or maintain emissions:** Emissions data was collected to determine if additional controls were necessary, or were monitored and maintained to ensure they did not exceed current limits. (2 agreements - the objectives were successfully met)
- **Reduce emissions/releases:** Emissions or releases were reduced from baseline levels. (7 agreements - 5 objectives were successfully met, 1 was partially met, and 1 was not met)
- **Restrict sale of product:** Sale of a product containing the substance within the agreement was restricted and not available to the general public. (1 agreement - the objective was not met)

The following table provides more details on the success rate of the objectives in the 13 agreements.

Table 3: Individual environmental performance agreement effectiveness

Environmental Performance Agreement	Substance	Summary of Objective	Outcome
E.I. DuPont Canada Company	Hydrochlorofluorocarbons (HCFCs)	Limit quantity produced: To set environmental performance objectives for the production of HCFCs in Canada, to allow	Agreement was successful (✓): DuPont (Chemours) is the sole Canadian manufacturer of HCFCs and was successful in keeping its annual

		<p>Canada to meet its obligations under 'The Montreal Protocol on Substances that Deplete the Ozone Layer'.</p> <p>Target: Not to exceed 122.9 ozone-depleting potential tonnes produced.</p>	<p>production levels of HCFCs below the limit.</p>
<p>Use of Tin Stabilizers in the Vinyl Industry 2008</p>	<p>Organotins</p>	<p>Full implementation of guideline:</p> <p>To prevent the release of tin stabilizers into the environment through the full implementation of the industry Guideline.</p>	<p>Agreement was successful (✓):</p> <p>Site verifications were conducted at each of the 33 participating facilities, all of which had fully implemented the Guideline by the end of the Agreement, thereby requiring no more follow-up activities.</p>
<p>Perfluorocarboxylic Acids (PFCAs) and their Precursors in Perfluorinated Products Sold in Canada</p>	<p>Residual perfluorooctanoic acid (PFOA), long-chain PFCAs and their precursors</p>	<p>Reduction/elimination of substance:</p> <p>Work towards the elimination of the substances, and collect and report information on the perfluorochemical</p>	<p>Agreement was successful (✓):</p> <p>All 4 participating companies were successful in the elimination of the substance by the target date.</p>

		<p>products sold in Canada.</p> <p>Target: 95% reduction by 2010, and 100% elimination by 2015.</p>	
Refractory Ceramic Fibre Industry 2006	Refractory ceramic fibres (RCF)	<p>Monitor and/or maintain emissions:</p> <p>To establish maximum allowable fenceline concentration of RCFs in ambient air and maintain a product stewardship program.</p> <p>Target: Respect the maximum fenceline concentration of 0.05 fibres/cc</p>	<p>Objective was met (✓):</p> <p>All facilities respected the maximum fenceline concentration which showed ambient levels of RCF to be very low to undetectable and all established and maintained a product stewardship program.</p>
Refractory Ceramic Fibre Industry 2002	RCF	<p>Monitor and/or maintain emissions:</p> <p>The 2002 objectives were to gather emissions data to determine if additional controls on RCF were needed and to confirm the commitment of the RCF industry to</p>	<p>Agreement was successful (✓):</p> <p>All facilities showed fenceline ambient levels of RCF to be very low to undetectable and stack emissions of RCF had low fibre concentrations. A product stewardship program was discussed in more detail and was</p>

		establish and maintain a product stewardship program.	further developed for the renegotiated 2006 agreement.
Rio Tinto Alcan	Polycyclic aromatic hydrocarbons (PAH)	<p>Reduce emissions/releases:</p> <p>To set environmental performance objectives with respect to atmospheric emissions of PAH from Rio Tinto Alcan's 3 Söderberg aluminium smelter facilities.</p> <p>Target: Varied per facility. See appendix of agreement for more details.</p>	<p>Agreement was successful (✓):</p> <p>Two of the facilities met the performance objectives every year until their respective closure in 2009 and 2013. Although the 3rd facility missed its 2013 and 2014 targets, it closed in 2015 thereby eliminating all emissions of the substance. This technology is no longer used in Canada.</p> <p>Emissions reduced by approximately 300 tonnes / year.</p>
Alcoa Ltd.	PAH	<p>Reduce emissions/releases:</p> <p>To set environmental performance objectives with respect to atmospheric emissions of PAH from Alcoa Ltd.'s Söderberg plant.</p>	<p>Agreement was successful (✓):</p> <p>The facility successfully met the agreement's objective. The facility continued with the performance verification process beyond the end of the agreement and reached 0.21 kg/tonne in</p>

		<p>Target: Not to exceed 0.25 kg/tonne of aluminium by 2008.</p>	<p>2009.</p> <p>Emissions were reduced to 0.25 kg/tonne in 2008, and to 0.21 in 2009.</p>
<p>Specialty Graphics Imaging Association</p>	<p>Volatile organic compounds (VOCs)</p>	<p>Reduce emissions/releases:</p> <p>To achieve verifiable reductions in the use, generation, and release of specified priority substances used in the screen printing and digital imaging sectors, focusing on, but not limited to VOCs.</p> <p>Target: An estimated aggregate 20% reduction of VOC emissions from participating companies between the 2000 baseline year and 2008.</p>	<p>Agreement was successful (✓):</p> <p>The participants successfully reduced their VOC emissions well below the 2008 target. By tracking VOCs, companies realized how much product was being used and were able to reduce VOCs and facility costs by reducing the amount of product used. Some of the smaller companies (with less than 15 people) found some of the commitments of the agreement difficult to fulfill which may have contributed to some facilities not participating in the agreement.</p> <p>VOC emissions were reduced by 7.4 tonnes (just over 50%) by 2003.</p>

<p>Canadian Chemical Producers Association (CCPA)</p>	<p>VOCs</p>	<p>Reduce emissions/releases:</p> <p>To reduce the release of chemical substances through voluntary, non-regulatory action under the CCPA Responsible Care® program by encouraging and recognizing progress.</p> <p>Target: To reduce VOC emissions by 25% by 2002, based on a 1997 base year.</p>	<p>Agreement was successful (✓):</p> <p>The agreement's objective was met by reducing their percentage of VOCs by 25% from the 1997 base year.</p> <p>Emissions were reduced by 25% (equivalent to approximately 3,976 tonnes of VOCs).</p>
<p>Dow Chemical Canada Inc.</p>	<p>1,2 Dichlorethane (DCE)</p>	<p>Reduce emissions/releases:</p> <p>To implement a management strategy for DCE to minimize emissions at its production facility and distribution facility.</p> <p>Target: A reduction of</p>	<p>Agreement was successful (✓):</p> <p>Both facilities had significantly reduced their DCE emissions and the agreement's objective was on track to being met well before schedule. Both facilities had ceased operations before the end of the agreement and therefore were no longer</p>

		DCE emissions by 48% for the Fort Saskatchewan plant and 49% for the North Vancouver plant by the end of 2006.	producing DCE emissions. By 2004, Fort Saskatchewan had reduced their emissions by 34% (3.96 tonnes), and North Vancouver by 54% (1.25 tonnes).
Railway Association of Canada	Criteria air contaminants (CAC) and greenhouse gases (GHG)	<p>Reduce emissions/releases:</p> <p>To establish a framework through which its signatories will address emissions of CAC and GHG from railway locomotives operated by Canadian railway companies in Canada.</p> <p>Target (see units in outcome column): Class 1 freight: 16.98 kg/1000 RTK¹</p>	<p>Agreement was partially successful:</p> <p>The agreement had set targets to reduce aggregate GHG emissions in 4 of its railway operations by 2010 and had successfully reached 3 of the 4. The one target that wasn't met (for commuter rails) was due to an increase in commuter rail operations which led to an increase in emissions, believed to be caused by an increase in passengers.²</p> <p>The following results were achieved:</p>

¹ Revenue Tonne-Kilometers

² Locomotive Emissions Monitoring Program 2010 report from the Railway Association of Canada

		<p>Short lines: 15.38 kg/1000 RTK¹</p> <p>Intercity passenger: 0.12 kg/passenger-km</p> <p>Commuter rail: 1.46 kg/passenger</p>	<p>Class 1 freight: 16.43 kg/1000 RTK¹</p> <p>Short lines: 15.21 kg/1000 RTK¹</p> <p>Intercity passenger: 0.12 kg/passenger-km</p> <p>Commuter rail: 2.06 kg/passenger</p>
Automotive Parts Manufacturers Association	VOCs, GHGs and other priority substances	<p>Reduce emissions/releases:</p> <p>To achieve verifiable reductions in the use, generation, and release of priority substances in the automotive parts sector, giving priority to pollution prevention.</p> <p>Target: An aggregate reduction of 20% of VOC emissions* and a 3% reduction of CO₂ emissions from all participating companies.</p>	<p>Agreement was not successful (✖):</p> <p>This agreement's objective was not met due to its low participation rate. There were approximately 254 companies in this sector, 25 of which were estimated to have VOC concerns, however only 5 companies participated in the agreement.</p> <p>Despite the low participation rate, the association did confirm that the participating companies met the 20% reduction of VOC emissions and 3% reduction of CO₂</p>

		<p>*Specific VOCs to be addressed included: Toluene, Xylenes, Methyl Ethyl Ketone, Methyl Isobutyl Ketone, Ethyl Benzene, Isopropyl alcohol, 1,2,4, Trimethyl benzene, Styrene, Methanol, Acetone.</p>	<p>emissions.</p> <p>The association provided evidence that the following VOC substances were reduced well beyond the 20% target:</p> <ul style="list-style-type: none"> - Methyl Ethyl Ketone by 91% - Toluene by 96% - Xylene by 93% - Iso Alcohol by 84% <p>CO₂ emissions were reduced by 1872 tonnes</p>
<p>2-Butoxyethanol (Paint and Coatings)</p>	<p>2-Butoxyethanol</p>	<p>Restrict sale of product:</p> <p>To ensure commercial paint and coatings for indoor use containing 2-butoxyethanol with a concentration exceeding the limits set out in Schedule 1 of the regulations will only be sold to industrial and commercial applicators and not to the general public.</p>	<p>Agreement was not successful (✖):</p> <p>The first verification audits that were conducted demonstrated a conformance rate of 30%. The second audit was slightly better at 36% conformance.</p> <p>Although the agreement's objective was not met, it did encourage several signatories to phase out the use and reformulate 2-butoxyethanol from their products, or to stop selling</p>

			<p>products that contained it.</p> <p>The health of Canadians remains protected through the prohibition of paints and coatings sales to the general public that exceed the limits under the <i>2-Butoxyethanol Regulations</i> which came into force in 2008.</p>
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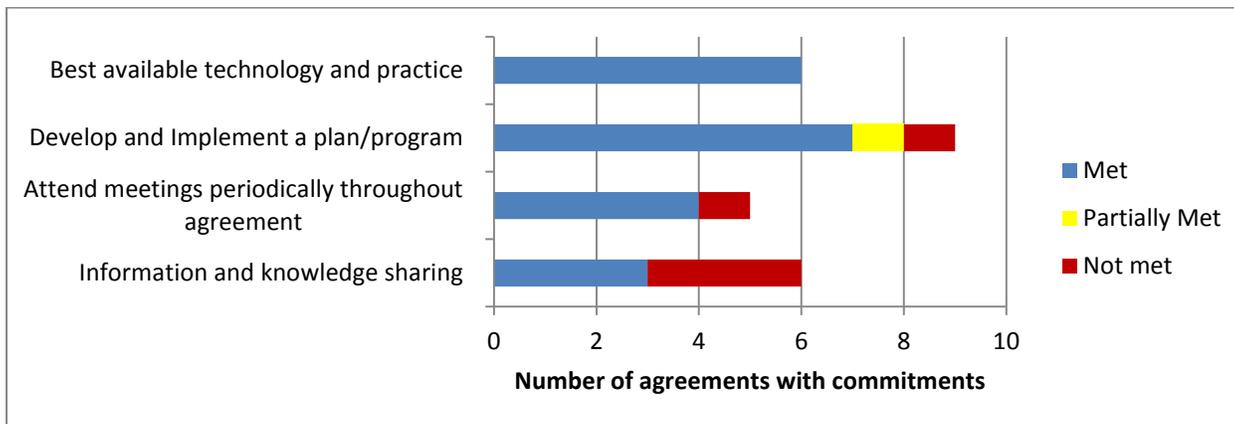
2.2 Additional company/facility commitments

In addition to having an environmental or health objective, agreements also specify additional key commitments (see Figure 3) to be met/implemented throughout the life of the agreement which help contribute to the achievement of the agreement's objective.

These additional commitments have been grouped into 4 categories:

- **Best available technology and practice:** This category includes commitments such as installing the best available technology (that is economically feasible), implementing best available techniques and/or performing regular equipment inspection and maintenance.
- **Develop and implement a plan/program:** Most of the agreements included a commitment to develop and implement a guidance or action plan. These included environmental management plans, action plans, environmental management pollution prevention programs and a product stewardship program.
- **Attend meetings periodically throughout agreement:** Several of the agreements required some level of commitment to attend and participate in meetings, either through the formation of steering or task force groups, or monitoring or management committees. The frequency of meetings varied from 1 to 5 per year. The purposes of the meetings varied amongst agreements and ranged from discussing release levels, establishing targets, sharing best practices, providing recommendations and reviewing progress.
- **Information and knowledge sharing:** Some agreements stipulated that facilities were to share best practices and transfer information to one another that could benefit the overall objective of the agreement. This was done through submitting case studies, during meetings and through discussions with the associations.

Figure 3: Additional company/facility commitments within agreements



The majority of agreements had between 2 to 4 commitments in addition to the main objective of the agreement. As Figure 3 demonstrates, the majority of commitments were met by facilities, with one partially met and several which did not meet the commitment. The agreement that partially met its commitment to develop and implement a plan/program, a plan had actually been developed by the Association. The reason it was considered partially met was because some of the smaller companies were not able to fully implement the plan due to lack of resources and time to maintain an Environmental Management System. The other agreements either failed to follow through with their commitments or there was insufficient data for ECCC to confirm if the commitments had been met due to reports not requesting full disclosure on this information or reports not being submitted. ECCC is now ensuring that reports are requesting information on the key commitments within an agreement.

2.3 Association commitments

Of the 13 completed agreements, 6 had an association as a signatory (see Table 2). For two of the 6, the associations represented their member companies/facilities in the agreement and therefore assumed all responsibilities for meeting the commitments of the agreement (the Railway Association of Canada and the Canadian Chemical Producers Association). For the remaining 4 agreements, the associations signed the agreement alongside their member companies/facilities in an effort to assist them in achieving the agreement's objective.

Several of the associations' commitments overlapped with those of the facilities, including attendance and participation in meetings, providing assistance with the development of guidance documents and the submission of case studies. Other commitments that were

specific to the associations ranged from:

- developing and providing training to facilities
- assisting ECCC with the development of the verification protocol
- informing and encouraging facilities to sign and participate in the agreement

Overall associations met their commitments, although there were a few instances where there was insufficient information to confirm if the commitments were met, such as the sharing of best practices or providing training. Better reporting requirements or communication with associations (and all signatories) would provide more clarity on commitments for all signatories.

2.4 ECCC and other government department commitments

ECCC, along with other federal or provincial departments that signed agreements, had various commitments to fulfill throughout the life of the agreements, the majority of which included commitments to publish annual reports, participate in meetings, provide training and assist in the verification process.

Most of the commitments were met, with the main exception being the publication of annual updates. One of the design criteria outlined in the Policy is for all agreements to provide public reporting on an annual basis. Over half of the agreements published on the government of Canada's website did not meet this requirement, however it was noted that several of the agreements did not specify this requirement or was vague on the required frequency of public reporting. ECCC is making a stronger commitment to ensuring that all new agreements conform to this policy standard of publishing annual updates on the Government of Canada website, and will aim to ensure that commitments under the Policies design criteria are also clearly stated within future agreements.

2.5 Verification requirements

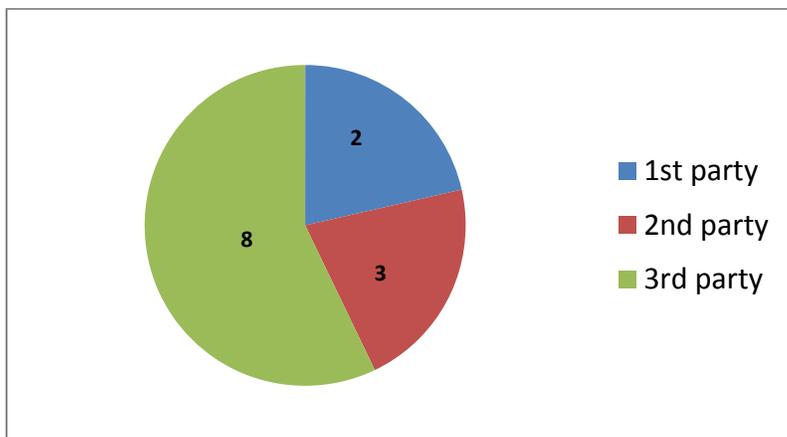
Verification of results is one of the core design criteria for ensuring the credibility and accountability of agreements and accuracy of the data submitted. Every agreement requires at least 1 of the 3 following levels of verification:

- **First party verification:** This type of verification consists of self-verification by the industry, which is submitted in an annual report and reviewed by ECCC. After reviewing the information, ECCC can decide to conduct a second party verification if they would like additional information or believe that the information is inaccurate.

- **Second party verification:** This type of verification is typically completed by industry associations, ECCC or other signatories to an agreement, who verify the performance of participating signatories (e.g. an association representative verifying the performance of its members or ECCC verifying the data submitted by signatories through a site visit).
- **Third party verification:** This type of verification is completed by independent auditors or verifying organizations.

The level of verification will vary depending on the nature of the agreement, complexity of monitoring or other requirements, and the substance(s) in question. In some circumstances, more than one level of verification can be conducted. Figure 4 displays the verification levels that were required by the agreements. Through facility reports and verifications visits, ECCC was able to track the progress of agreements to determine if signatories were fulfilling their obligations.

Figure 4: Verifications levels as specified in agreements



The number and frequency of verifications required varied between the agreements ranging from an annual verification to a one-time only verification at some point during the agreement. Due to various factors (e.g., facility closures), not every agreement conducted the number of verification audits as stipulated in the agreement. It was also difficult with some of the older agreements to determine if all the required verifications proceeded at the frequency and level requested in the agreement due to insufficient information.

Overall, it was difficult to determine if the level of verification had a significant effect on the success of an agreement. For the 5 agreements that required 1st or 2nd level verifications (see Figure 4), all agreement objectives were fully met, whereas only 5 of 8 of the agreement's objectives that required 3rd party verification were met, and 2 partially met. As mentioned, the level of verification depends on the complexity and nature of the

agreement, however having a higher level of verification requirement does provide more credibility to the reported results of an agreement.

ADDITIONAL ACTIONS FOLLOWING THE COMPLETION OF AN AGREEMENT

As mentioned under the background section of this report (section 1), agreements can be used to address various issues, and can act as a complement or a precursor to another instrument, or as an alternative to a regulation. When an agreement ends, there are several follow-up actions that ECCC can take, including renewal, replacement with another risk management instrument, or ending the agreement. Follow up actions are determined based on the potential for continued risk to the environment or human health, the effectiveness of the environmental performance agreement, and if another instrument or action is better suited to address or manage the risk.

Renewal

To date, 2 agreements have been renewed (the Tin Stabilizers agreement was renewed in 2015 and Refractory Ceramic Fibre Industry agreement has been renewed twice, in 2006 and 2013). The renewed agreements have demonstrated continuous improvement as well as evolving objectives and commitments, leading to the continued success of these agreements.

Replacement with other instruments

Regulations have been put in place following the completion of 3 of the agreements, however not necessarily due to ineffectiveness of the agreement. The 2-Butoxyethanol agreement which came into effect on January 24, 2007, was developed as a precursor to the *2-Butoxyethanol Regulations*. *Its purpose was to cover a gap in the regulations since the section regarding the sale of products subject to the regulations came into force 2 years after the publication of the regulation on December 27, 2006.* The agreement was developed in order to ensure that the specified commercial paints and coatings were not accessible to public consumers in the interim period. The agreement was no longer necessary once that section of the regulation came into force.

The E.I. DuPont Canada Company agreement was developed as precursor to the *Ozone-depleting Substances and Halocarbon Alternatives Regulations*, and supported Canada's obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer until

the regulation came into force.

Finally, the PFCA agreement was identified as early risk management action as the Government of Canada pursued further assessment to guide future risk management actions. The substances are now covered by the *Prohibition of Certain Toxic Substances Regulations, 2012*. This measure aims at ensuring that these substances are not re-introduced into the Canadian market.

Two agreements were renegotiated with other government departments and jurisdictions outside the federal government and ECCC is no longer a signatory. The Railway Association of Canada entered into a memorandum of understanding with Transport Canada covering the period between 2011 and 2016. Its intention was to act as a precursor until the proposed Locomotive Emissions Regulations were introduced³. The Alcoa agreement was originally developed as an interim agreement until the province of Quebec developed the *Clean Air Regulations* (published in 2011) to control emissions from that industry. When the agreement ended and the regulations were not yet in place, the province of Quebec entered into their own agreement with the industry.

Agreements that ended with no further action taken

The Rio Tinto Alcan agreement was initially developed in recognition of its commitment to reduce its air emissions of PAHs from its old smelters by pursuing alternative practices or technologies. As of 2015, all facilities had permanently shut down all their Söderberg potlines. In 2006, Dow Canada shut down its chlor-alkali and direct chlorination ethylene dichloride plants in Fort Saskatchewan due to the costs required to maintain operations at the aging facilities. As a result of these closures and shutdowns there was no need for further action and both agreements ended. Other agreements that ended and were not replaced with other risk management actions include the Canadian Chemical Producers' Association, which had met the agreement's objective, and the Automotive Parts Manufacturers' Association due to numerous factors. These included the low participation rate, the fact that companies felt they were already meeting the objectives of the agreement and the province of Ontario had developed a similar agreement under the framework for

³ Transport Canada website (<https://www.tc.gc.ca/eng/policy/acs-locomotive-emissions-mou-3064.htm>)

Cooperative Agreements.

SUMMARY OF ENVIRONMENTAL PERFORMANCE AGREEMENTS EFFECTIVENESS

Environmental performance agreements have proven to be successful instruments in managing risks from selected pollutants, including substances deemed toxic, with the main objective within 77% of agreements being fully met, 8% being partially met, and only 15% not being met. The analysis below summarizes whether the company/facility commitments (as discussed in section 2.2), the participation of associations and verification requirements had any impacts on the success of an agreement's objective.

It was difficult to determine if the company/facility commitments had much impact on the success of an agreement's objective. One similarity where a potential correlation could be drawn was for those agreements that required some form of communication among signatories (e.g. meetings, sharing information). Of 6 agreements that had this type of commitment, 5 demonstrated positive results, with the only exception being the 2-Butoxyethanol agreement. Although this agreement had a commitment to share best practices with the association, the agreement did not specify how the association was to disseminate that information to the other signatories. Although speculative, success may have been higher if better instruction had been provided on how to best share this information among the other signatories.

Although there is no concrete evidence to conclude that having stronger communication requirements within agreements results in higher success rates, it is clear that there are definite benefits of providing an organized forum for participants and signatories to discuss issues, best practices and progress within an agreement.

Six agreements had associations who were also signatories and provided assistance during the agreement. Although associations definitely play a key role in providing assistance during an agreement and ensuring companies are informed, those that did not have associations seemed to perform equally well. However, for some small and medium sized companies, associations can provide much needed assistance. Associations may be more capable of reaching and informing new and smaller facilities that might be unknown to the government. They also have a good understanding of the sector and are able to assist in the development of plans and guidelines, are able to adapt these for small and medium sized companies (e.g. the Specialty Graphics Imaging Association agreement) and provide

assistance to companies in achieving their targets. It should be noted though that even if companies/facilities are known to the association, recruiting them to participate in the agreement is not necessarily guaranteed, as could be seen with the Automobile Parts Manufacturing Association, who actively recruited members throughout the duration of the agreement but was only successful in recruiting a small proportion of companies in the sector.

It was unclear if the level or frequency of verifications had much influence on the success rate of an agreement. It can be concluded however that having a more consistent approach to verification would be beneficial and having a higher level of verification would increase the credibility of an agreement. Having a second or third party verification may also provide an opportunity for improvement beyond the requirements of the agreement. For example, the Tin Stabilizers agreement revealed that site verification visits were an opportunity for ECCC and the Vinyl Council of Canada to confirm that the required pollution prevention measures of the industry Guideline had been fully implemented in each facility and provided an opportunity to help some facilities fine-tune the application of the Guideline. The interaction between the facility representatives and the verifiers helped increase awareness of the requirements of the Guideline and to develop possible improvements in the approach to prevent releases of the substance into the environment. It also provided verifiers with an opportunity to informally make suggestions of best practices on related activities that went above and beyond the Guideline practices.

Lessons learned

When negotiating agreements that are signed by associations on behalf of its member companies/facilities, ECCC should ensure a strong industry commitment prior to signing the agreement. For example, during the negotiation process with the Automotive Parts and Manufacturing sector it was believed that there would be a higher commitment level from industry than there actually was, despite the association actively seeking new companies to join. If there isn't a strong commitment from industry from the very beginning, a voluntary agreement might not be the appropriate instrument to manage a substance.

The incentives of joining an agreement and consequences for an agreement's objective not being met should also be considered during the negotiation process. Having a better understanding of motivators of the industry sector and potential barriers can help with the development of an agreement. Some sectors and companies have taken their own initiative

and strived to reduce their impact to the environment and human health or participated in other environmental programs, others joined due to pressure received from the public and customers and some have approached ECCC about entering into an agreement. One motivator that has always proven effective to industry is financial incentives. When possible, areas for cost savings should be examined and explained to the companies/facilities such as money saving techniques resulting from the replacement of older equipment with more efficient equipment. Another example is a facility from the Specialty Graphics Imaging Association agreement that was able to reduce their insurance premiums by eliminating the Occupational Health and Safety (OHS) risks associated with the hazardous substance.

Extra consideration should be given to small and medium sized companies who may not have the resources to meet the same demands of an agreement as larger companies. Less resources and staff make meeting timelines, installing and maintaining more costly equipment difficult to achieve. Agreements that have developed plans or programs to help guide companies in achieving the agreement's objective might need to be simplified for smaller companies.

Another important aspect for all agreements is having good communication and a clear understanding of all requirements of the agreement with signatories. For example, annual reports should have clear instructions and request data from companies/facilities on all commitments specified in the agreement to ensure they are being followed and to determine if industry is having difficulty fulfilling its commitments. Having ECCC continually communicate and send reminders throughout the agreement has proven to help motivate signatories to submit reports and meet deadlines. As mentioned previously, it may also be beneficial to develop a management committee with signatories to oversee the progress of an agreement and to ensure continual communication.

There should also be clear and detailed instructions on verification protocols and reports should be inclusive to ensure all verification information is captured. For recently developed agreements, the standard practice now is to have verification protocols included as an appendix to the agreement. This ensures a verification protocol is developed for all agreements and is readily accessible.

When negotiating an agreement, it is important to follow the Policy ([Policy Framework for Environmental Performance Agreements](#)) and ensure all commitments within the design criteria of the Policy, such as ECCC's annual reporting requirements, are reflected in the

agreement, and where appropriate specify timelines for publishing updates. ECCC will continue to track progress with agreements, ensure roles and responsibilities and reporting requirements are clear and will continue to improve agreements through lessons learned.

CONCLUSION

The 13 completed environmental performance agreements included in the analysis for this report have demonstrated that they have been an effective means of preventing, controlling and/or minimizing the release of substances into the environment. Many agreements have been able to significantly reduce and occasionally eliminate a substance from industrial processes or use, as can be seen in Table 3 of this report. For example, VOC emissions were reduced by approximately 25% through the Canadian Chemical Producers Association agreement, just over 50% by the Specialty Graphics Imaging Association agreement, and even though the participation rate was very low in the Automotive Parts Manufacturers Association agreement, the companies that did participate were able to reduce several VOC emissions between 84 and 96%.

Although these are voluntary agreements, the commitment shown by industry to reduce the risk to the environment and human health has been evident by the results achieved and continues to be seen in agreements that are currently active. As mentioned, many sectors had begun to take early action prior to the signing of the actual agreement and some continued to follow the agreement even after it had ended.

As new environmental performance agreements are negotiated, ECCC will strive for continual improvement to ensure that agreements remain an effective and efficient alternative to more regulated instruments, in controlling substances that are found to be hazardous to the environment and human health.

ANNEX 1

The following tables provide a list of ongoing and completed environmental performance agreements.

Table 1: Ongoing environmental performance agreements

Environmental Performance Agreement	Dates of Agreement	Signatories (other than ECCC)	Number of Facilities / Companies
Air Pollutants from the Iron Ore Sector	January 2018 to June 2026	<ul style="list-style-type: none"> Participating companies in the iron ore sector 	2
Air Pollutants from Base Metal Facilities	January 2018 to December 2025	<ul style="list-style-type: none"> Participating companies in the base metal sector 	5
Air Pollutants From the Aluminium and Alumina Sector	November 2017 to December 2025	<ul style="list-style-type: none"> The Aluminium Association of Canada Participating companies in the Aluminium and Alumina sector 	3
The Use of Tin Stabilizers in the Vinyl Industry (renegotiated)	March 2015 to March 2020	<ul style="list-style-type: none"> Vinyl Institute of Canada* Participating companies with Vinyl Compounding Facilities ⁴ 	31
Refractory Ceramic Fibre Industry (renegotiated)	March 2013 to March 2018	<ul style="list-style-type: none"> RCF manufacturing and processing companies 	5

*This Agreement was originally signed on March 17, 2015 by representatives from ECCC, the Vinyl Council of Canada (an Operating Council of the Canadian Plastics Industry Association) and participating companies. In January 2017, ECCC received notice from the Association that the Vinyl Council of Canada had elected to transfer its responsibilities under the Agreement to the Vinyl Institute of Canada. The Vinyl Institute of Canada

⁴ The companies/facilities who participated in this agreement signed a separate commitment form, not the actual agreement.

agreed to take on the Vinyl Council of Canada's roles and responsibilities identified in the Agreement. On March 2, 2017, the Agreement was amended and signed by all the parties.

Table 2: Completed environmental performance agreements

Environmental Performance Agreement	Dates of Agreement	Signatories ⁵ (other than ECCC)	Number of Facilities / Companies
Bisphenol A in Paper Recycling Mill Effluents ⁶	March 2013 to March 2017	<ul style="list-style-type: none"> • Paper recycling companies 	13
E.I. DuPont Canada Company	January 2010 To December 2016	<ul style="list-style-type: none"> • E.I. DuPont Canada Company 	1
Perfluorocarboxylic Acids (PFCAs) and their Precursors in Perfluorinated Products	March 2010 to December 2015	<ul style="list-style-type: none"> • Health Canada • Companies from the perfluorinated products industry 	4
Rio Tinto Alcan	May 2008 to December 2014	<ul style="list-style-type: none"> • Rio Tinto Alcan company 	3
Alcoa Ltd.	May 2008 to December 2009	<ul style="list-style-type: none"> • Alcoa company 	1
The Use of Tin Stabilizers in	March 2008	<ul style="list-style-type: none"> • Vinyl Council of Canada 	33

⁵ This column contains the names of signatories as they appear on the agreement. Note that some of the official names may have changed since the date of signature.

⁶ Although Bisphenol A in Paper Recycling Mill Effluents agreement had ended in March 2017, data analysis in this report does not include results from this agreement.

the Vinyl Industry	to March 2013	<ul style="list-style-type: none"> • Tin Stabilizers Association • Participating companies with vinyl compounding facilities⁷ 	
Railway Association of Canada	May 2007 to December 2010	<ul style="list-style-type: none"> • Transport Canada • Railway Association of Canada 	57 (association signed on behalf of companies / facilities)
2-Butoxyethanol (Paint and Coatings)	January 2007 to January 2012	<ul style="list-style-type: none"> • Health Canada • Canadian Paint and Coatings Association • Paint and coatings companies 	12
Refractory Ceramic Fibre Industry (renegotiated)	October 2006 to October 2011	<ul style="list-style-type: none"> • RCF manufacturing and processing companies 	9
Specialty Graphics Imaging Association	January 2004 to January 2008	<ul style="list-style-type: none"> • Specialty Graphics Imaging Association • Participating association member companies and other screen printing and digital imaging facilities 	5
Automotive Parts Manufacturers' Association	October 2002 to December 2007	<ul style="list-style-type: none"> • Industry Canada • Automotive Parts Manufacturers' Association • Participating association member companies⁴ 	5
Refractory Ceramic Fibre Industry	February 2002 to December 2006	<ul style="list-style-type: none"> • RCF manufacturing and processing companies 	6

⁷ The companies/facilities who participated in this agreement signed a separate commitment form, not the actual agreement.

<p>Canadian Chemical Producers' Association</p>	<p>April 2001 to December 2005</p>	<ul style="list-style-type: none"> • Health Canada • Industry Canada • Ontario Ministry of the Environment • Alberta Ministry of Environment • Canadian Chemical Producers' Association 	<p>25 (association signed on behalf of companies / facilities)</p>
<p>Dow Chemical Canada Inc.</p>	<p>October 2001 to October 2006</p>	<ul style="list-style-type: none"> • Dow Chemical Canada Inc. company 	<p>2</p>