Consultation on the proposed regulatory approach to reduce emissions of formaldehyde from composite wood products

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1 Introduction

Formaldehyde is a colourless gas found in indoor and outdoor air. Elevated formaldehyde air concentrations may cause irritation of the eyes, nose, and throat and can worsen asthma symptoms and allergic sensitivities, especially in children. At higher levels, such as those that have been measured in some workplace environments, formaldehyde has been associated with cancer of the nasal passageways.

In Canada, a number of risk management measures are already in place for formaldehyde; however, additional actions are required to reduce emissions of formaldehyde in indoor air.

On December 1, 2016, a Private Members' motion was introduced to the House of Commons calling on the Government of Canada to adopt regulations on formaldehyde emissions for composite wood products intended for indoor use that are sold, provided, or supplied for sale in Canada and to ensure that these regulations are similar to those set out by the United States (U.S.) Environmental Protection Agency (EPA). This initiative was debated in the House of Commons on February 16, 2017 and April 7, 2017. The final vote occurred on May 3, 2017 with the House unanimously agreeing to the motion.

On March 18, 2017, a Notice of Intent to develop regulations respecting formaldehyde was published in the Canada Gazette, Part I (Canada, 2017). A key element of the approach is to develop regulations under the Canadian Environmental Protection Act, 1999 (CEPA 1999) that recognize current North American activities. As an initial step in the consultation process for regulatory development, introductory webinars were launched on April 5 and April 19, 2017 and a voluntary data gathering questionnaire was launched on April 5, 2017.

The proposed regulations are intended to be published in the Canada Gazette, Part I, in 2018.

Health Canada, in collaboration with Environment and Climate Change Canada, has prepared this consultation document to inform stakeholders, and to solicit comments on key elements of the proposed regulatory approach.

The specific objectives are to:

- inform interested stakeholders of this proposed regulatory approach to reduce the emissions of formaldehyde to indoor air from composite wood products that are manufactured, used, processed, sold, offered for sale, or imported into Canada
- provide interested stakeholders with an opportunity to provide input with regard to the development of the proposed regulations
- solicit information with respect to the economic and technical considerations that would guide the development of the proposed regulations

- solicit information on the challenges and needs of all implicated sectors as well as small and medium enterprises that may be impacted by the proposed regulations

Interested stakeholders may include non-governmental organizations; Indigenous peoples; labour organizations; provincial and territorial governments; and industry, particularly importers, retailers, distributors, manufacturers, and associations.

The Government of Canada is committed to providing interested stakeholders with the opportunity to take part in consultations pertaining to the development of the regulations. All stakeholders are invited to provide comments on the consultation document during the consultative process outlined in Section 6.4 of this document.

2 Background

2.1 Formaldehyde

Formaldehyde (CAS RN[1] 50-00-0) is a colourless volatile organic compound found in indoor and outdoor air. Formaldehyde levels in indoor air are typically significantly higher than in outdoor air because formaldehyde is emitted from various indoor sources including combustion (such as cooking, cigarette smoke, and fireplaces), building materials, and household products. Formaldehyde can be a significant component in resins that are used as adhesives/binders in composite wood products. Testing has shown that formaldehyde is released from more than 90% of selected composite wood products tested. Emission levels range widely depending on the type of product and manufacturing practices. Outdoor sources of formaldehyde include combustion (such as on-road vehicles, forest fires), industrial processes, and secondary atmospheric formation.

The health effects associated with formaldehyde are well recognized by many organizations including Health Canada, the International Agency for Research on Cancer, the World Health Organization (WHO), and the U.S. EPA. Short term exposure to formaldehyde can cause irritation of the eyes, nose, and throat and may worsen asthma symptoms, especially in children. Longer term exposure (several days or more), at concentrations below those that cause irritation, may also be linked to respiratory symptoms and allergic sensitivities in children. At higher levels, such as those seen in some workplace environments, formaldehyde has been associated with cancer of the nasal passageways.

2.2 Historical and current uses of formaldehyde

Formaldehyde is used predominantly in the synthesis of resins, with urea-formaldehyde resins, phenolic-formaldehyde resins, and other resins accounting for about 92% of

[1] CAS RN: Chemical Abstracts Service Registry Number. The Chemical Abstracts Service information is the property of the American Chemical Society and any use or redistribution, except as required in supporting regulatory requirements and/or for reports to the Government of Canada when the information and the reports are required by law or administrative policy, is not permitted without the prior, written permission of the American Chemical Society.

Canadian consumption (PSL, 2001). These resins are used to create composite wood products. About 6% of formaldehyde uses are related to fertilizer production, while 2% are used for various other purposes, such as preservatives and disinfectants (Environment Canada, 1997). Formaldehyde was used in the synthesis of urea-formaldehyde foam insulation which was widely used in the 1970's for insulating and retrofitting industrial, commercial, and older residential buildings. The manufacture, importation, advertisement, and sale of urea-formaldehyde-based thermal insulation are prohibited by the combined effect of section 5 of the Canada Consumer Product Safety Act (CCPSA) and article 13 of Schedule 2 of that Act (CCPSA, 2010).

2.3 Manufacturing, import, and export of composite wood products in Canada

Estimates of overall manufacture, import, export, and sale of composite wood products in Canada are important for use in the regulatory impact analysis of these proposed regulations to ensure that the approach(es) taken reflect the most recent Canadian market.

2.3.1 Manufacturing and exports

In Canada, there are 12 composite wood panel mills that produce particleboard and fibreboard in six provinces. Five of these mills are located in Quebec, mostly in rural areas. There are 10 hardwood plywood mills with nine located in Quebec. Canadian composite wood panel mills employ approximately 11,500 workers, and pay nearly $724 million in wages annually resulting in a total impact on the Canadian economy of about $3.41 billion[2]. The table below (Table 1) outlines the total production volumes of structural and wood panels in Canada as well as the volume exported to the U.S. in 2015.

Table 1: Wood panel exports to the U.S. in 2015

Type	Total production	Volume exported	Volume exported to U.S.	% of exports to U.S. (volume exported to the U.S./total production)
Structural panels[a]	9864 (million square feet 3/8" basis)	6509 (million square feet 3/8" basis)	6076 (million square feet 3/8" basis)	**61.6%**
Wood panels	12,789,000[b] (m^3)	7,665,410[b] (m^3)	7,251,478[c] (m^3)	**56.7%**

[a] 2016 Data APA 4th Quarter Report, Oriented Strandboard (OSB) + Plywood
[b] 2015 Data from FAOSTAT
[c] Estimate based on the U.S. share of total Canadian panel exports reported in the Global Trade Atlas and FAO total export data (FAO does not report exports to individual countries)

Table 2 below provides the values in Canadian Dollars of composite wood products that were exported (including products manufactured in Canada then exported, and re-exported products) from Canada between 2014 and 2016 (ISED, 2017). See Appendix

[2] Personal communication with Natural Resources Canada.

1 for related International Harmonized System (HS) codes that were not reported as exported or imported in Canada between 2014 and 2016.

Table 2: Values in Canadian dollars of total exports of composite wood products

Type	HS code	Value in Canadian dollars ($)		
		2014	2015	2016
Veneer/plywood sheets	440810; 440831; 440839; 440890; 441210; 441231; 441232; 441239	465,966,275	609,108,879	665,937,480
Particleboard, of wood	441011	275,597,970	319,005,165	351,509,620
Waferboard and similar board	441019	8,883,029	9,304,626	9,967,205
Medium Density Fibreboard (MDF)	441112; 441113; 441114	242,914,873	325,235,028	299,345,748
Fibreboard, excluding MDF	441192; 441193; 441194	51,851,419	53,652,547	101,543,627
Veneered panels and similar laminated wood	441299	92,800,942	99,335,003	121,706,222
Wooden furniture	940330; 940340; 940350; 940360; 940390	1,758,542,000	2,223,448,000	2,547,622,000
Boards, panels, consoles, desks, cabinets and other bases for control boards or panels	853810	63,202,000	62,070,000	74,288,000
Total		**2,959,758,508**	**3,701,159,248**	**4,171,917,902**

2.3.2 Imports

Information from the 2016 Industry, Science and Economic Development Canada Trade Data Online database indicates that Canada continues to import composite wood products that may contain formaldehyde. Table 3 below provides the values in Canadian Dollars of composite wood products that were imported into Canada from 2014 to 2016 (ISED, 2017). See Appendix 2 for related HS codes not reported as imported into Canada between 2014 and 2016.

Table 3: Values in Canadian dollars of imported composite wood products

Type	HS code	Value in Canadian dollars ($)		
		2014	2015	2016
Veneer/plywood	440810; 440831;	474,882,911	504,658,390	531,544,403

sheets	440839; 440890; 441210; 441231; 441232; 441239			
Particleboard, of wood	441011	67,277,513	77,266,567	81,289,016
Waferboard and similar board	441019	3,817,169	3,342,548	2,557,969
Medium Density Fibreboard (MDF)	441112; 441113; 441114	294,157,543	402,424,430	455,517,924
Fibreboard, excluding MDF	441192; 441193; 441194	207,217,072	122,567,642	114,710,910
Veneered panels and similar laminated wood	441299	45,910,328	51,804,952	80,165,686
Wooden furniture	940330; 940340; 940350; 940360; 940390	2,097,720,000	2,270,599,000	2,294,882,000
Boards, panels, consoles, desks, cabinets and other bases for control boards or panels	853810	69,737,000	72,094,000	61,141,000
Total		3,260,719,536	3,504,757,529	3,621,808,908

2.4 Domestic risk management of formaldehyde

2.4.1 Federal

Formaldehyde is currently managed under several Canadian federal Acts and Regulations.

For example, formaldehyde was identified as a priority substance in 1995 as part of the Second Priority Substances List initiative. In 2001, Environment and Climate Change Canada (formerly Environment Canada) and Health Canada completed a risk assessment under this initiative. This risk assessment concluded that formaldehyde is harmful to human health and the environment under CEPA 1999. Formaldehyde was added to the List of Toxic Substances in Schedule 1 of CEPA 1999.

In 2006, Health Canada completed residential indoor air quality guidelines for formaldehyde. These guidelines serve as a scientific basis for activities to reduce the health risk of indoor contaminants, are recommendations only and not under legislation. A short term exposure limit of 123 micrograms per cubic metre [µg/m^3] (100 parts per billion [ppb]) was set based on eye irritation observed in humans. A long term exposure limit of 50 µg/m^3 (40 ppb) was set based on respiratory symptoms in children. Formaldehyde was measured in approximately 500 Canadian homes in different cities between 2007 and 2015. All houses had at least some formaldehyde in indoor air, with average daily levels generally ranging from 10 to 40 µg/m^3 (8 to 32.5 ppb). However, approximately 8% of homes tested exceeded Health Canada's long term exposure limit.

Limiting the release of formaldehyde, or promoting the use of low formaldehyde emitting products, is part of many voluntary standards or programs. Specifically in Canada, a new voluntary standard (CAN/CSA-O160-16 – Formaldehyde emissions standard for composite wood products) was established by the Canadian Standards Association (CSA) in 2016 (with support from Health Canada). The CSA standard harmonizes the limits with regulations that were already in place in the state of California, and with U.S. regulations which, at that time, were anticipated (these are described below under Section 2.5). While individuals and companies may choose to follow the CSA standard (CSA, 2016), they are not obligated to do so. Actions under these voluntary initiatives therefore have a potentially lower impact on reducing overall indoor formaldehyde emissions than a regulatory approach.

The advertisement, importation or sale of urea formaldehyde-based thermal insulation (commonly known as Urea Formaldehyde Foam Insulation or UFFI), foamed in place, used to insulate buildings, was prohibited in Canada under the Hazardous Products Act (HPA, 1985) between December 1980 and 2011. The advertisement, importation and sale of this type of insulation was prohibited due to the high levels of formaldehyde that were released during the installation process, as well as the continued off-gassing of formaldehyde from poorly installed insulation. Since 2011, the manufacture, importation, advertisement or sale of urea formaldehyde-based thermal insulation, foamed in place, used to insulate buildings, has been prohibited under CCPSA (CCPSA, 2010).

A number of risk management actions have been developed to reduce formaldehyde emissions to outdoor air such as on- and off-road emission regulations (ECCC, 2017a, b, c); a memorandum of understanding for environmental protection between industry, the Government of Canada and two provincial governments (Ontario and Alberta) (ECCC, 2013); as well as Environmental Emergency Regulations (ECCC, 2017d).

Canada Occupational Health and Safety Regulations (SOR/86-304) under the Canada Labour Code require every employer to develop a procedure for investigating situations in which the health or safety of an employee in the workplace is or may be endangered by the air quality (Canada, 2016). The Canada Labour Code also established an occupational exposure limit for formaldehyde of 0.03 parts per million (ppm) (Canada, 2016).

2.4.2 Provincial and territorial

Each province or territory has occupational health and safety legislation that apply to workplaces in those regions (CCOHS, 2017).

Occupational exposure limits on the concentrations of chemicals or substances in workplace air are addressed by occupational health and safety legislation. All provinces and territories have set occupational exposure limits for formaldehyde (CAREX Canada, 2017a and b). The limits range from 0.03 to 2 ppm depending on the province or territory.

In addition to these exposure limits, provincial and territorial occupational health and safety legislation set out requirements to be followed when working with chemicals, including formaldehyde.

In addition to legislative requirements, various groups in the provinces and territories provide helpful information that raises awareness of several formaldehyde-related topics. These topics may include potential hazards; how to control exposure to formaldehyde; and regulatory requirements. For example, l'Institut de recherche Robert-Sauvé en santé et en sécurité du travail in Quebec has a detailed publication titled Prevention Guide: Formaldehyde in the Workplace. This publication is intended to be a tool to help industry understand the risks associated with formaldehyde and how they can mitigate those risks in the workplace (IRSST, 2006).

2.5 International risk management of formaldehyde emissions from composite wood products

More than 10 countries, including some member states of the European Union (EU), have restricted formaldehyde in some manner. Actions in selected international jurisdictions are described below. See Appendix 3 and 4 for a table of standards and emission limits for formaldehyde in composite wood products in other jurisdictions.

2.5.1 United States

In 2010, the U.S. Congress tasked the U.S. EPA with developing national regulations to manage formaldehyde emissions. The proposed Toxic Substances Control Act (TSCA) Title VI rule, entitled Formaldehyde Emission Standards for Composite Wood Products, was published in July 2016 and finalized in December 2016 (EPA, 2016b). This national rule requires composite wood products sold in, or imported into the U.S. to comply with emission standards based on the California Air Resources Board (CARB) formaldehyde emission requirements (Phase I in 2009, Phase II in 2010) (California, 2010) along with other requirements such as traceability and certification. The California standard (commonly known as CARB2) applies to the following composite wood products: hardwood plywood, particleboard, medium density fibreboard (MDF), and thin MDF.

The U.S. TSCA Title VI rule has a similar scope to that of CARB2 and includes laminated composite wood products. The U.S. TSCA Title VI rule includes testing requirements, product labelling, chain of custody documentation and other record keeping requirements, enforcement, import certification, and product inventory sell-through provisions, including a product stockpiling prohibition. This final rule also establishes a third-party certification (TPC) program involving accreditation bodies and TPCs (EPA, 2016b).

2.5.2 European Union

Mandatory testing and labelling of formaldehyde off-gassing is present in certain jurisdictions of the EU, including Germany, France, and Denmark.

Germany has laws that restrict formaldehyde emissions from wood products (DIBt, 2017). For example, the Chemicals Prohibition Ordinance was enacted in 1993 and amended in January 2017 (UBA, 2015). This law includes specific national restrictions on wood products such as chip boards, core boards, multiply plywood, and fibreboards which do not comply with the formaldehyde emission standard outlined in the regulation (UBA, 2015). Another is the Model Building Code. The scope of this law is broad as it states that buildings shall be built in a way that human life, health, and natural resources are not endangered (DIBt, 2017). For wood/timber products in compliance with a technical standard and subject to the Chemicals Prohibition Ordinance, manufacturers must demonstrate their compliance by providing the formaldehyde emission levels on their product performance declaration. When a technical product standard does not exist for a particular wood/timber product, the “Deutsches Institut für Bautechnik” issues a national technical approval for the product which also addresses compliance with the Chemicals Prohibition Ordinance.

In January 2017, French authorities notified the European Commission of a draft order pursuant to the decree on the mandatory labelling of wood-based furniture products regarding emissions of volatile pollutants, specifically formaldehyde emission levels. This order requires labelling of wood-based furniture products with emission levels into indoor air using a scale from A+ (very low emissions) to C (high emissions). See Appendix 4 for the maximum formaldehyde exposure concentration levels for each class. The draft order also gives details on the different methods for evaluating formaldehyde emission levels from furniture and how the label is to be presented. The proposal specifies that the regulations will come into force on January 1, 2020 for products entering the market. For existing products on the market, the regulations will apply as of January 1, 2021 (European Commission, 2017a).

In March 2017, Denmark released a draft order to restrict the use and sale of new wood-based materials and furniture which emit formaldehyde. The regulations include different formaldehyde emission cut-offs for wood-based materials used in the manufacture of furniture and related parts and for the sale of furniture. The regulations do not apply to construction products; used furniture and parts that complied with the Danish requirements when first sold; and furniture and parts made with wood-based materials which are meant to be exported to non-EU countries (European Commission, 2017b).

Formaldehyde is currently being evaluated by France and the Netherlands under the Community Rolling Action Plan based on concerns relating to human health. Under REACH, registrants have until October 2017 to submit information regarding emission rates over time of formaldehyde into indoor air from major sources found in the indoor environment (ECHA, 2015).

2.5.3 Other countries

Mexico has proposed a standard similar to the CARB2 regulations that would limit formaldehyde emissions from wood products.

Japan has widely used standards known as the Japanese Agriculture Standard (JAS) (USA, 2016) that are administered by the Minister of Agriculture, Forestry and Fisheries. Some of these standards are specific to certain wood products such as laminated veneer lumber, plywood, and glued laminated timber (Japan, 2017). The JAS standards concerning formaldehyde emissions from wood products are considered to be one of the most stringent of all the countries with established limits; however, they are voluntary (Japan, 2017). The JAS system is not implemented by law, but compliance with the standards includes testing and labelling of products (USA, 2016). Japan also uses the Japanese Industrial Standards (JIS), for industrial activities (USA, 2016). JIS standards are also voluntary. There are however, some restrictions regarding formaldehyde-emitting building materials under the Building Standard Law, such as the size of interior finishing materials depending on the type of habitable room, and the mandatory installation of ventilation equipment in all buildings due to formaldehyde-emitting furniture (JETRO, 2009).

In Australia, several voluntary standards have been developed by Standards Australia to limit formaldehyde emissions from pressed wood products (NICNAS, 2016). Although the Australian Standards are not normally regulated by the government (Standards Australia, 2017), rather government agencies such as the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) refer to these standards to mitigate the risk of formaldehyde emissions from pressed wood products (NICNAS, 2016). These standards are commonly used in a few other countries, such as New Zealand, Fiji, and Papua New Guinea (EWPAA, 2017). Testing and labelling of pressed wood products in Australia is carried out by the Engineered Wood Products Association of Australasia (EWPAA), which also advocates for the use of low formaldehyde emitting adhesives (EWPAA, 2017).

3 Proposed regulatory approach

The proposed federal regulatory approach would require that all composite wood products manufactured, used, processed, sold, offered for sale, or imported into Canada, including laminated products and finished goods made from composite wood products, comply with emission standards for formaldehyde set out in regulations after the regulations come into force. The new regulations would not apply to products or articles that are in Canada before the coming into force date.

The Government of Canada is considering the CSA standard and regulatory approaches taken in the U.S. and other jurisdictions as models for designing the proposed federal regulations.

The proposed regulations would be developed under CEPA 1999. Section 93(1) of CEPA 1999 enables the making of regulations with respect to a substance specified on the List of Toxic Substances in Schedule 1. The Government of Canada is currently proposing the development of these new formaldehyde regulations to include the key elements described in the next subsections.

These regulations are one element of a federal approach to reduce formaldehyde exposure from indoor air, but are directed specifically at the protection of human health.

For more information on other risk management actions under CEPA 1999 for the reduction of formaldehyde emissions in the environment, see the Environment and Climate Change Canada web page on formaldehyde.

3.1 Definitions

The Government of Canada is considering similar terminology as that defined in regulatory measures in other jurisdictions in order to provide transparency and a common understanding of the terms under discussion. The following definitions of composite wood product types and the sectors that may be affected by the regulations are aligned with CARB2, CSA or U.S. EPA, to the extent possible. These definitions are intended for consultative purposes and are subject to change in or removal from the proposed regulations.

Accreditation body: an organization that provides an impartial verification of the competency of conformity assessment bodies or third-party certifiers.

Composite wood panel: a hardwood plywood board, softwood plywood board, particleboard, medium density fiberboard (MDF), high density fiberboard, low density fiberboard, oriented strand board (OSB), waferboard or veneer corrugated board.

Distributor: any person or entity to whom a composite wood product, component part, or finished good is sold or supplied for the purposes of resale or distribution in commerce, except that manufacturers and retailers are not distributors.

Engineered wood products: lumber, veneers, strands of wood, or from other small wood elements that are bound together with structural resins to form lumber-like structural products and designed for use in the same structural applications as sawn lumber (e.g., girders, beams, headers, joists, studs, and columns). These products include laminated veneer lumber, laminated strand lumber, parallel strand lumber, I-joists, and glue-laminated beams.

Fabricator: a person or entity who incorporates composite wood products into component parts or into finished goods. This includes laminated product producers, but persons or entities in the construction trades are not fabricators by renovating or remodeling buildings.

Finished good: any good or product, other than a panel, that contains hardwood plywood (with a veneer or composite core), particleboard, or medium-density fiberboard and that is not a component part or other part used in the assembly of a finished good.

Hardwood plywood: a panel composed of an assembly of:

a) hardwood layers or plies of veneer; or
b) veneers in combination with a platform consisting of composite core or special back material, joined with an adhesive.

Laminated product: a product in which a wood or woody grass veneer is affixed to a particleboard core or platform, a medium-density fiberboard core or platform, or a veneer core or platform. A laminated product is a component part used in the construction or assembly of a finished good. In addition, a laminated product is produced by either the fabricator of the finished good in which the product is incorporated or a fabricator who uses the laminated product in the further construction or assembly of a component part.

Laminated product producer: a manufacturing plant or other facility that manufactures (excluding facilities that solely import products) laminated products on the premises.

Medium density fiberboard: a panel composed of cellulosic fibers (usually wood) made by dry forming and pressing of a resinated fiber mat.

Oriented strandboard (OSB): subset of reconstituted wood products called flakeboards where relatively long and narrow flakes (strands) are blended with resin and formed into a layered mat. Strands in each layer are aligned perpendicular to adjacent layers.

Panel producer: a manufacturing plant or other facility that manufactures (excluding facilities that solely import products) composite wood products on the premises.

Particleboard: a panel composed of cellulosic material (usually wood) in the form of discrete particles (as distinguished from fibers, flakes, or strands) that are pressed together with resin.

Retailer: any person or entity that sells, offers for sale, or supplies directly to consumers composite wood products, component parts or finished goods that contain composite wood products, except that persons or entities in the construction trades are not considered retailers by selling, renovating, or remodeling buildings.

Softwood plywood: several layers of dry softwood veneer glued together with an adhesive.

Stockpiling: manufacturing or purchasing composite wood products, whether in the form of panels or incorporated into component parts or finished goods, at an average rate at least 20% greater than the average rate of manufacture or purchase for the purpose of circumventing the emission standards.

Thin MDF: medium density fiberboard that has a maximum thickness of 8 mm.

Third-party certifier: a conformity assessment body that provides both product certification services and laboratory testing services (either directly or through contracted services).

Waferboard: subset of reconstituted wood products called flakeboards where relatively long and narrow flakes (strands) are blended with resin and formed into a layered mat. Strands in each layer are aligned randomly.

3.2 Potentially affected sectors

Table 4 below presents a non-exhaustive list of North American Industrial Classification System (NAICS) codes representing potentially affected sectors who manufacture, use, process, sell, offer for sale and import hardwood plywood, MDF, particleboard, and/or finished goods containing these composite wood products in Canada. This list is meant to help stakeholders determine whether this intended risk management action may potentially apply to them.

Table 4: North American Industry Classification System (NAICS) codes relevant to the development of the proposed regulations (similar to those implicated in the U.S. EPA Rule)

NAICS code	Title of code
3212	Veneer, plywood and engineered wood product manufacturing
321211	Hardwood veneer and plywood mills
321212	Softwood veneer and plywood mills
321215	Structural wood product manufacturing
321216	Particle board and fibreboard mills
321217	Waferboard mills
32191	Millwork
321911	Wood window and door manufacturing
321919	Other Millwork
321920	Wood container and pallet manufacturing
321991	Manufactured (mobile) home manufacturing
321992	Prefabricated wood building manufacturing
336213[1]	Motor home manufacturing
336214[1]	Travel trailer and camper manufacturing
336215	Motor home, travel trailer and camper manufacturing
337	Furniture and related product manufacturing
3371	Household and institutional furniture and kitchen cabinet manufacturing
337110	Wood kitchen cabinet and counter top manufacturing
337121	Upholstered household furniture manufacturing
337123	Other wood household furniture manufacturing
33993	Doll, toy and game manufacturing [includes 339930 wooden toys, manufacturing]
4143[2]	Home furnishings merchant wholesalers
414320[2]	Floor covering merchant wholesalers
414390[2]	Other home furnishings merchant wholesalers
41446	Toy and hobby goods merchant wholesalers
414470	Amusement and sporting goods merchant wholesalers, Children's go-carts toy merchant wholesalers
415190[2]	Recreational and other motor vehicles merchant wholesalers
4163[2]	Lumber, millwork, hardware and other building supplies merchant wholesalers
416310[2]	General-line building supplies merchant wholesalers
416320[2]	Lumber, plywood, and millwork merchant wholesalers
416390[2]	Other specialty-line building supplies merchant wholesalers

419110 419120	Games, toys and hobby kits, business-to-business (B2B) electronic markets, wholesale Import agents or brokers of toys
423110[1]	Automobile and other motor vehicle merchant wholesalers
42321[1]	Furniture merchant wholesalers
42331[1]	Lumber, plywood, millwork, and wood panel merchant wholesalers
423390[1]	Other construction material merchant wholesalers. e.g., merchant wholesale distributors of manufactured homes (i.e., mobile homes) and/or prefabricated buildings
441210	Recreational vehicle (RV) dealers
442 4421 442110 4422 442291 442292 442298	Furniture and home furnishings stores Furniture stores Furniture stores (excludes custom furniture, and combination office equipment/furniture) Home furnishings stores Window treatment stores Print and picture frame stores All other home furnishing stores (e.g. lamps, etc.)
4441 444110 444120 444130 444190	Building material and supplies dealers Home centres Paint and wallpaper stores Hardware stores Other building material dealers
45112	Hobby, toy and game stores
453210	Office supplies and stationary store (includes combination office equipment/furniture stores)
453930	Mobile home dealers
541330 541380 541611[1] 541990[1]	Engineering services Testing laboratories Administrative management and general management consulting services All other professional, scientific, and technical services
561990	All other support services
813910 813920	Business associations Professional organizations

[1] U.S. NAICS code (NAICS, 2017a)
[2] Canadian equivalent NAICS code (NAICS, 2017b)

3.3 Application

The proposed regulations would apply in respect of the manufacture, use, processing, sale, offer for sale or importation of composite wood products containing formaldehyde.

3.4 General exemptions

The Government of Canada proposes to exempt:

- naturally occurring traces of formaldehyde

- composite wood products containing formaldehyde that were manufactured or imported before the day on which the proposed regulations would come into force

3.4.1 Naturally occurring traces of formaldehyde

Formaldehyde occurs naturally in the environment and is the product of many natural processes. It is not the Government of Canada's intent to limit the use of natural resources that may contain naturally occurring traces of formaldehyde.

3.4.2 Composite wood products containing formaldehyde that were manufactured or imported before the day on which the regulations come into force

The proposed regulations may contain "sell-through" provisions whereby non-complying products manufactured or imported before the coming into force date may be sold for specified time periods after this date. However, stockpiling provisions for composite wood products manufactured or imported before regulations come into force will also be considered to prevent the accumulation of large stocks of composite wood products for the purposes of circumventing the emissions standards or for other reasons.

3.4.3 Exemptions under consideration

Specific exemptions may be considered in exceptional circumstances, taking into account socio-economic factors, the demonstrated absence of suitable alternatives, and with consideration of human health risks. Should specific exemptions be included, fixed time limits may be proposed. Any on-going uses may be accompanied by reporting, record keeping, monitoring, labelling or other requirements to inform the public of the presence of formaldehyde.

The Government of Canada invites stakeholders to provide a rationale pertaining to the inclusion or exclusion of certain composite wood products from the proposed regulations.

3.5 Testing

The Government of Canada is considering testing requirements for industry sectors affected by the proposed regulations given the regulations would apply emission standards for formaldehyde from composite wood products. Testing may be carried out by third-party certifiers and overseen by recognized accreditation bodies.

The Government of Canada is considering a requirement that any analysis or determination performed by a third-party certifier for the purpose of determining compliance to the regulations be conducted by a laboratory that is accredited under the International Organization for Standardization (ISO) standard ISO/IEC 17025:2005, entitled General requirements for the competence of testing and calibration laboratories. A third-party certifier would have to be verified by an accreditation body recognized by

the Government of Canada. Accreditation body recognition will be considered as part of the process in the development of the proposed regulations.

3.6 Labelling

Labelling requirements are being considered. These could resemble requirements outlined in the U.S. TSCA Title VI final rule and regulatory approaches in other jurisdictions. The Government of Canada is considering a requirement that information elements provided on a label are in the official languages of Canada.

Recognition of equivalent labels from other jurisdictions, such as the U.S., is further being considered as development of the regulations progresses.

3.7 Record keeping

The Government of Canada is considering requirements for record keeping whereby importers, distributers, manufacturers, and retailers would maintain records such as bills of lading, invoices, and written statements from the supplier stating that the products comply with the Canadian regulations. Recognition of equivalent records from other jurisdictions, such as the U.S., is also being considered.

The Government of Canada may consider different record keeping requirements for different sectors. Certain records may need to be maintained, including records of emissions and quality control testing, and productions records, such as date of manufacture and lot numbers. Records related to purchaser and transporter information may also need to be maintained.

3.8 Reporting

The Government of Canada is considering reporting requirements. These may resemble those outlined in the U.S. TSCA Title VI (EPA, 2016b). For example, reporting requirements could include:

- an annual report for the third-party certifier services performed during the previous calendar year
- monthly product data reports of measured emission levels from panel producers to third-party certifier for each production facility, production line, and product type

3.9 Changes to other regulations

The proposed regulations would reduce formaldehyde emissions from composite wood products containing formaldehyde in Canada. No changes to other legislation are anticipated at this point in time.

4 Potential benefits of regulations

4.1 Health benefits

The human health risks associated with exposure to formaldehyde are well established. A regulatory approach is expected to have more of an impact than current guidelines and voluntary standards on reducing overall indoor formaldehyde levels. An enforceable risk management approach is therefore required to further protect the health of Canadians.

Regulations limiting the use of formaldehyde in composite wood products, including their manufacture, use, processing, sale, offer for sale, and import would reduce exposure of Canadians to formaldehyde from these products by reducing levels in the indoor air.

4.2 Alignment with other jurisdictions

With the reduction of formaldehyde emissions from composite wood products, Canada would be joining over 10 countries that have already taken action or have measures under development including the U.S. and some member states of the EU. For more information, see Section 2.5.

The Government of Canada recognizes the importance of regulatory alignment between Canada and the U.S.

5 Alternatives to formaldehyde in composite wood products

The most well-known and commonly used alternatives to formaldehyde-based resins are no-added formaldehyde (NAF) based resins and ultra-low emitting formaldehyde (ULEF) resins. NAF-based resins are typically made from soy, polyvinyl acetate, or methylene diisocyanate. As the name suggests, NAF-based resins do not contain any formaldehyde. ULEF resins contain formaldehyde; however, the resins are formulated in a way that limits formaldehyde emissions to levels well below the applicable CARB2 emission standards (ARB, 2016).

The use of any alternatives may be regulated under other Canadian legislation, such as the New Substances Notification Regulations of CEPA 1999. Before using an alternative, a person should determine their obligations in respect to them.

6 Next steps

6.1 Information gathering

The Government of Canada instituted the policy that a cost-benefit analysis (CBA) must be carried out for all significant regulatory proposals to assess their potential impacts on the environment, workers, businesses, consumers, and other sectors of society. The

objective of the CBA is to assess the incremental impacts that are expected to occur as a result of a regulatory proposal. These impacts are then assessed in accordance with the Treasury Board Secretariat's Canadian Cost-Benefit Analysis Guide (TBS, 2007).

To obtain the necessary information to conduct a CBA for the proposed regulations, a voluntary data gathering questionnaire was launched during webinars on April 5 and 19, 2017. The information requested included the volume of formaldehyde containing composite wood products in commerce in Canada, identification of product subtypes, and the number and size of companies impacted by the proposed regulations.

Additional information will be collected through this consultation document and an upcoming online pre-consultation engagement and a multi-stakeholder workshop. This information will be used to support the development of the regulatory proposal and to assess the incremental impacts of the proposed regulations.

6.2 Consultation

On March 18, 2017, Health Canada and Environment and Climate Change Canada published a Notice of Intent (NoI) in the Canada Gazette, Part I to develop regulations respecting formaldehyde in composite wood products. The publication of the NoI to regulate was followed by a 60-day public comment period ending May 17, 2017.

The Government of Canada received six comments on the NoI on behalf of two industry associations, three non-governmental organizations, and one federal crown corporation. All submissions were supportive of the development of formaldehyde regulations, suggesting alignment with the U.S. EPA Formaldehyde Emission Standards for Composite Wood Products and/or applying the requirements outlined in CARB2.

Additional recommendations include: taking a precautionary approach in considering alternatives to formaldehyde, effective management of stockpiled products, third-party labelling and tracking of components and products, and drafting a phase-in period for eventual removal of all formaldehyde uses. There was also a focus on clearly outlining the inclusions and exclusions in the regulations as well as clear definition of terms for the consumer products to avoid confusion between standards in other jurisdictions and to increase compliance. These comments will be taken into consideration during the development of the regulations.

Comments received on the consultation document will be taken into consideration to inform the multi-stakeholder workshop on September 6, 2017. An online pre-consultation engagement activity will be held on August 1, 2017 to collect preliminary stakeholder input on the proposed regulatory approach to inform the agenda for the multi-stakeholder workshop. Stakeholders are invited to contact the Substances Management Information Line at eccc.substances.eccc@canada.ca to indicate their interest in participating in the workshop by August 16, 2017.

The objective of the multi-stakeholder workshop is to engage participants in a collaborative discussion on targeted issues and recommendations as they relate to the proposed regulations.

6.3 Regulatory reform

As part of its Red Tape Reduction Action Plan, the Government of Canada has introduced the One-for-One Rule and the Small Business Lens. In moving forward with the proposed regulations, the Government of Canada will apply these two reforms to ensure that the administrative burden on business is reduced where possible and that small businesses are taken into account with respect to any foreseeable administrative and compliance challenges.

6.3.1 One-for-One Rule

The One-for-One Rule is aimed at reducing the administrative burden on business and at limiting the growth in the number of federal regulations. The One-for-One Rule requires the calculation of administrative burden on business in new regulations and in regulatory amendments. Any increases in administrative burden must be offset (by an equivalent reduction in administrative burden) from the existing stock of federal regulations. Also, for every new regulation introduced that imposes administrative burden on business, an existing regulation must be repealed.

Administrative burden is defined as anything that is necessary to demonstrate compliance with a regulation, including the collecting, processing, reporting, and retaining of information, and completing of forms.

6.3.2 Small Business Lens

The purpose of the Small Business Lens is to ensure that the specific needs of small business are considered and that the least burdensome but most effective approach to addressing these needs is identified. A small business is defined as any business, including its affiliates, that has fewer than 100 employees or has between $30,000 and $5 million in annual gross revenues.

6.4 Comment period

Comments on the consultation document must be submitted in writing no later than September 1, 2017 to the contact information below.

Comments received during this period will be taken into consideration while drafting the proposed regulations.

Pursuant to section 313 of CEPA 1999, any person who provides information to the Minister of the Environment under CEPA 1999 may submit with the information a written request that it be treated as confidential. Please submit comments to the Substances Management Information Line by email to: eccc.substances.eccc@canada.ca with the subject “Formaldehyde Inquiry”.

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8 Appendices

Appendix 1: HS codes that were not reported as exported or imported between 2014 and 2016

HS code	Code description
440820	Veneer/plywood sheets (thickness < 6mm) - tropical wood
441010	Particle boards of wood
441021	Particle boards of wood - oriented strandboards/waferboards - unworked, sanded
441029	Particle boards of wood - oriented strandboards/waferboards - other not elsewhere specified
441031	Particle boards of wood - other than oriented strandboards/waferboards - unworked, sanded
441032	Particle boards of wood - covered with melanine-impregnated paper
441033	Particle boards of wood - covered with decorative plastic laminates
441039	Particle boards of wood - edge or face worked (whether painted or not)
441111	Fibreboard (density > 0.8 g/cm^3) - not mechanically worked or covered
441119	Fibreboard (density > 0.8 g/cm^3) - other not elsewhere specified
441121	Fibreboard (density 0.5-0.8 g/cm^3) - not mechanically worked or covered
441129	Fibreboard (density 0.5-0.8 g/cm^3) - other not elsewhere specified
441131	Fibreboard (density 0.35-0.5 g/cm^3) - not mechanically worked or covered
441139	Fibreboard (density 0.35-0.5 g/cm^3) - other not elsewhere specified
441191	Fibreboard (density < 0.35 g/cm^3) - not mechanically worked or covered
441199	Fibreboard (density < 0.35 g/cm^3) - other not elsewhere specified
441211	Plywood (plies < 6 mm thick) - at least 1 outer ply of tropical wood
441212	Plywood (plies < 6 mm thick) - at least 1 outer ply of non-coniferous wood
441213	Plywood (plies < 6 mm thick) - at least 1 outer ply of tropical wood
441214	Plywood (plies < 6 mm thick) - at least 1 outer ply of non-coniferous wood
441219	Plywood (plies < 6 mm thick) - at least 1 outer ply of other wood not elsewhere specified
441221	Veneered or laminated panels - at least 1 outer ply of non-coniferous wood
441222	Veneered or laminated panels - at least 1 outer ply of tropical non-coniferous wood
441223	Veneered or laminated panels - at least 1 outer ply of non-coniferous particle board
441229	Veneered or laminated panels - at least 1 outer ply of non-coniferous wood not elsewhere specified
441291	Veneered or laminated panels - at least 1 outer ply of coniferous wood
441292	Veneered or laminated panels - at least 1 outer ply of tropical coniferous Wood
441293	Veneered or laminated panels - at least 1 outer ply of coniferous particle board

Appendix 2: HS codes not reported as imported into Canada between 2014 and 2016

HS code	Code description
440820	Veneer/plywood sheets (thickness < 6 mm) - tropical wood
441010	Particle boards of wood
441021	Particle boards of wood - oriented strandboards/waferboards - unworked, sanded
441029	Particle boards of wood - oriented strandboards/waferboards - other not elsewhere

	specified
441031	Particle boards of wood - other than oriented strandboards/waferboards - unworked, sanded
441032	Particle boards of wood - covered with melanine-impregnated paper
441033	Particle boards of wood - covered with decorative plastic laminates
441039	Particle boards of wood - edge or face worked (whether painted or not)
441111	Fibreboard (density > 0.8 g/cm^3) - not mechanically worked or covered
441119	Fibreboard (density > 0.8 g/cm^3) - other not elsewhere specified
441121	Fibreboard (density 0.5-0.8 g/cm^3) - not mechanically worked or covered
441129	Fibreboard (density 0.5-0.8 g/cm^3) - other not elsewhere specified
441131	Fibreboard (density 0.35-0.5 g/cm^3) - not mechanically worked or covered
441139	Fibreboard (density 0.35-0.5 g/cm^3) - other not elsewhere specified
441191	Fibreboard (density < 0.35 g/cm^3) - not mechanically worked or covered
441199	Fibreboard (density < 0.35 g/cm^3) - other not elsewhere specified
441211	Plywood (plies < 6 mm thick) - at least 1 outer ply of tropical wood
441212	Plywood (plies < 6 mm thick) - at least 1 outer ply of non-coniferous wood
441213	Plywood (plies < 6 mm thick) - at least 1 outer ply of tropical wood
441214	Plywood (plies < 6 mm thick) - at least 1 outer ply of non-coniferous wood
441219	Plywood (plies < 6 mm thick) - at least 1 outer ply of other wood not elsewhere specified
441221	Veneered or laminated panels - at least 1 outer ply of non-coniferous wood
441222	Veneered or laminated panels - at least 1 outer ply of tropical non-coniferous wood
441223	Veneered or laminated panels - at least 1 outer ply of non-coniferous particle board
441229	Veneered or laminated panels - at least 1 outer ply of non-coniferous wood not elsewhere specified
441291	Veneered or laminated panels - at least 1 outer ply of coniferous wood
441292	Veneered or laminated panels - at least 1 outer ply of tropical coniferous wood
441293	Veneered or laminated panels - at least 1 outer ply of coniferous particle board

Appendix 3: Comparison of standards for formaldehyde emissions from composite wood products across jurisdictions

Country	Standard	Classification (most stringent)	Maximum value (ppm)
United States*	CARB2	n/a	0.05 to 0.13
Canada	CSA	n/a	0.05 to 0.13
Germany*	EN 717-1	E1	0.1
Australia	AS/NZS 4357.4	E0	0.04
Japan**	JAS	F****	0.03
Japan**	JIS	F****	0.03

* standards are mandatory

** maximum value is estimated because Japanese standards are tested differently from EU, Australia, and USA

Appendix 4: Maximum formaldehyde exposure concentration levels (in µg/m^3) and corresponding classes proposed by France

Class	C	B	A	A+
Formaldehyde	≥ 10	<10	<5	<3