



2016 Update: Minnesota Chemicals of High Concern List

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Minnesota Department of Health
Division of Environmental Health
PO Box 64975,
St. Paul, MN 55164-0975
651-201-4899
<http://www.health.state.mn.us/divs/eh/hazardous/topics/toxfreekids>

Report prepared by: David Bell

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Abbreviations and Acronyms

BBP	Butyl benzyl phthalate
BPA	Bisphenol A
CAS RN	Chemical Abstract Service Registry Number
CDR	Chemical Data Reporting (under EPA)
CEC	Chemicals of Emerging Concern (under MDH)
CHC	Chemicals of High Concern
CPIT	Chemicals in Products Interagency Team
DBP	Dibutyl phthalate
DecaBDE	Decabromodiphenyl ether
DEHP	Di (2-ethylhexyl) phthalate
ECHA	European Chemicals Agency
EPA	United States Environmental Protection Agency
HBCD	Hexabromocyclododecane
HPV	High Production Volume
IUR	Inventory Update Reporting (under EPA)
MDH	Minnesota Department of Health
MPCA	Minnesota Pollution Control Agency
OctaBDE	Octabromodiphenyl ether
PBDEs	Polybrominated diphenyl ethers
PBT	Persistent, Bioaccumulative, and Toxic
PC	Priority Chemical
PCBs	Polychlorinated biphenyls
PentaBDE	Pentabromodiphenyl ether
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation, and Restriction of Chemicals
SVHC	Substances of Very High Concern
TCEP	Tris (2-chloroethyl) phosphate
TDCPP	Tris (1,3-dichloro-2-propyl) phosphate
TFK	Toxic Free Kids
TSCA	Toxic Substance Control Act
vPvB	Very Persistent and Very Bioaccumulative
WA CHCC	Washington Chemicals of High Concern to Children

Executive Summary

The Minnesota Chemicals of High Concern (CHC) list was created by the Minnesota Department of Health (MDH) as a result of state legislation (Minnesota Statutes 116.9401 to 116.9407) passed in 2009 known as the Toxic Free Kids Act (Minnesota Statutes, 2015). The purpose of the CHC list is to identify chemicals that could be harmful to human or environmental health because they are known or suspected carcinogens, reproductive or developmental toxicants, systemic toxicants, endocrine disruptors; are persistent, bioaccumulative, and toxic (PBT); or are very persistent and very bioaccumulative (vPvB).

The original CHC list was published in 2010 and contained 1,756 chemicals. From this CHC list a smaller chemical list, called the Priority Chemical (PC) list, was derived and consists of nine chemicals. The chemicals on the PC list must meet the CHC requirements and are further required to be high production volume (HPV) chemicals that have been found through sampling and analysis to be in human tissue, the natural environment, or the household environment.

Both the CHC list and PC list are dynamic lists and reviews and revisions of the lists are a continuous process. The CHC list is required by statute to be reviewed and updated at least every three years and this report accompanies the second such update of the CHC list. The previous CHC list update in 2013 focused on chemical source data updates and a review of persistent, bioaccumulative, and toxic (PBT) chemicals on the list. The 2013 review resulted in the CHC list totaling 1,731 chemicals.

The 2016 review of the CHC list focused on updating the HPV status of chemicals already on the list and of those chemicals being added to the list. Chemical manufacturers report national production volumes to the United States Environmental Protection Agency (EPA) in a reporting cycle of about every four years. Chemicals that report greater than one million pounds of national production volume are considered HPV. Because this still includes a very large number of chemicals and because MDH is interested in chemicals that are consistently being reported in high volumes over many reporting cycles, MDH has further narrowed its CHC list HPV definition. Chemicals listed as HPV on the CHC list are those that have one million pounds or more of national production volume in both the most recent reporting cycle to the EPA and in three of the previous four reporting cycles as well. This definition has been used since the original CHC list creation in 2010. The 2016 review of HPV chemicals resulted in 457 chemicals having HPV status while previously only 443 chemicals were HPV. The chemicals that had HPV status either added or removed can be found in Appendix A, tables 1 and 2.

The 2016 update of the CHC list also included a review of chemicals to be added or removed from the list. For potential chemicals to be added to the list, MDH reviewed authoritative state, federal, and international chemical hazard lists for chemicals that met the CHC statutory requirements. This process resulted in the addition of 66 chemicals to the 2016 CHC list (Appendix B). MDH also reviewed the CHC list for chemicals that could be removed. The focus was identifying chemicals with primary uses that are exempt product uses/applications as

described in Minnesota Statute 116.9405, specifically, food and pharmaceutical products. This resulted in 28 chemicals being removed from the 2016 CHC list (Appendix C). The addition and removal process of the CHC list update resulted in the total list size changing from 1,731 chemicals in 2013 to 1,769 chemicals in 2016.

Moving forward, MDH is developing a prioritization framework that will provide consistency and transparency in naming new chemicals to the PC list. MDH will continue to work with its state agency partners throughout this process. At this time, the chemical tris (1, 3-dichloro-2-propyl) phosphate (TDCPP) and the chemical group of nonylphenols and its ethoxylates are still considered candidate chemicals for the PC list.

In the spring of 2016 MDH, the Minnesota Pollution Control Agency (MPCA), and the Minnesota Department of Commerce formally established the Chemicals in Products Interagency Team (CPIT). Through CPIT, the member agencies hope to better align their work efforts involving the many issues and projects relating to chemical exposures in the human environment. CPIT creates a formal process for sharing and working across agencies on these related projects. One of the first tasks of CPIT is analyzing the many chemical restriction statutes in Minnesota to confirm lead agency oversight and the compliance requirements of each agency. Several of the statutes that CPIT will analyze involve PC list chemicals. A list of the chemical restriction statutes that CPIT will be reviewing can be found in Appendix D.

The updated 2016 CHC list and this report are published on the MDH website and can be found at: Toxic Free Kids: Chemicals of High Concern and Priority Chemicals (www.health.state.mn.us/divs/eh/hazardous/topics/toxfreekids). Future updates and revisions will also be published on the MDH website. To receive notifications of MDH activity related to the Toxic Free Kids Act the public can sign up for e-mails notices at the above web link.

Legislative Background

In 2009 state legislation was passed related to concerns about potentially hazardous chemicals being found in consumer products, especially products intended for children. This legislation, known as the Minnesota Toxic Free Kids Act, requires the Minnesota Department of Health (MDH), in consultation with the Minnesota Pollution Control Agency (MPCA), to create and maintain two chemical lists. The first list, called the Chemicals of High Concern (CHC), is defined in Minnesota Statutes 116.9401, paragraph (e):

- (e) "Chemical of high concern" means a chemical identified on the basis of credible scientific evidence by a state, federal, or international agency as being known or suspected with a high degree of probability to:
- (1) harm the normal development of a fetus or child or cause other developmental toxicity;
 - (2) cause cancer, genetic damage, or reproductive harm;
 - (3) disrupt the endocrine or hormone system;
 - (4) damage the nervous system, immune system, or organs, or cause other systemic toxicity;
 - (5) be persistent, bioaccumulative, and toxic; or
 - (6) very persistent, and very bioaccumulative.

The statute sets an update schedule and defines sources for the CHC list in Minnesota Statutes 116.9402, paragraphs (b) through (d):

- (b) The department must periodically review and revise the list of chemicals of high concern at least every three years. The department may add chemicals to the list if the chemical meets one or more of the criteria in section 116.9401, paragraph (e).
- (c) The department shall consider chemicals listed as a suspected carcinogen, reproductive or developmental toxicant, or as being persistent, bioaccumulative, and toxic, or very persistent and very bioaccumulative by a state, federal, or international agency. These agencies may include but are not limited to, the California Environmental Protection Agency, the Washington Department of Ecology, the United States Department of Health, the United States Environmental Protection Agency, the United Nation's World Health Organization, and European Parliament Annex XIV concerning the Registration, Evaluation, Authorization, and Restriction of Chemicals.
- (d) The department may consider chemicals listed by another state as harmful to human health or the environment for possible inclusion in the list of chemicals of high concern.

MDH published the first CHC list in July of 2010 and the first CHC list update in July of 2013 on the MDH website at: [Toxic Free Kids: Chemicals of High Concern and Priority Chemicals](#)

(www.health.state.mn.us/divs/eh/hazardous/topics/toxfreekids). This report describes the 2016 update to the CHC list that replaces the previous versions.

2016 Chemicals of High Concern Update

Previous Chemicals of High Concern Lists

The Minnesota Chemicals of High Concern (CHC) list was created in 2010 and was first updated in 2013. The original 2010 CHC list contained 1,756 chemicals and through the 2013 update was revised to contain 1,731 chemicals. The 2013 update evaluated the chemicals on the original CHC list for the data needed to meet the Minnesota statutory requirements for a CHC. In particular this review focused on new data and updated models that provided more information for evaluating persistent, bioaccumulative, and toxic (PBT) chemicals. At the time, new information had been recently published that allowed MDH to perform a more in-depth review of the PBT properties of many of the chemicals on the original CHC list. In addition to this review of PBT properties, MDH reviewed new toxicity literature as well as authoritative state, national, and international chemical hazard lists for chemicals that met the CHC list requirement. Through this 2013 update, 57 chemicals were excluded and 32 chemicals were added to the CHC list which brought the total list size to 1,731 chemicals. For more information and an in-depth explanation of the 2013 CHC list update and review, visit the MDH website, Toxic Free Kids: Reports (www.health.state.mn.us/divs/eh/hazardous/topics/toxfreekids/reports.html).

High Production Volume Chemicals

A requirement in Minnesota's statutory definition of a chemical on the Priority Chemical (PC) list, the list that builds off of the CHC list, is that the chemical be a high production volume (HPV) chemical named by the U.S. Environmental Protection Agency (EPA). An HPV chemical is a chemical that is manufactured or imported into the United States in quantities of one million pounds or more per year. Because the HPV status of a chemical on the CHC list affects the eligibility of a chemical for the PC list, HPV chemical status is reviewed and included on the CHC list.

Under the U.S. Toxic Substances Control Act (TSCA), manufacturers or importers of a chemical in the quantity of 25,000 pounds or more per year must report to the EPA under what is now called the Chemical Data Reporting (CDR) rule, which occurs on a four year cycle (U.S. Environmental Protection Agency, 2016b). Before 2011 the CDR was known as the Inventory Update Reporting (IUR) cycle and, for the original publication of the 2010 CHC list, MDH reviewed reporting cycles from the years 1990, 1994, 1998, 2002, and 2006 for HPV chemicals. Because HPV chemicals can vary over reporting cycles and reviewing all the HPV chemicals of the past 20 years was impractical, MDH focused on chemicals that were listed on both the most recent inventory of the time, 2006, and on three of four remaining inventories from 1990-2002.

Chemicals that met these parameters were considered HPV on the original CHC list. This definition of a HPV chemical helped focus the CHC list on the chemicals that were consistently being reported in high volumes throughout the years. After reviewing chemicals that fit these HPV criteria, as well as the health endpoint and hazard criteria of a CHC chemical, 443 chemicals were designated as HPV on the original 2010 CHC list and were then retained as HPV on the updated 2013 CHC list.

In 2013 the EPA IUR cycles became the CDR rules and the 2012 CDR data was made available. This 2012 CDR data was the first new and updated data for HPV chemicals since the final IUR cycle of 2006. Due to the timing of this release by EPA, MDH was unable to incorporate the new 2012 CDR data to update chemical HPV status in the 2013 CHC update. Since this updated HPV data was not incorporated into the 2013 CHC update, this was a major focus of the 2016 CHC update.

For the 2016 CHC update, MDH reviewed the 2012 CDR data and reassessed the HPV status of the 443 chemicals designated as HPV on the original CHC list. Again, to be marked as an HPV chemical on the original CHC list in 2010, a chemical needed to have been an HPV chemical in the most recent reporting year, 2006, and in three of the previous four reporting cycles from 1990 to 2002. This definition is being retained in the 2016 update for consistency with how HPV chemicals were listed on the original CHC list, and because the MDH HPV definition helps identify chemicals with a high proxy measurement of exposure potential due to their consistency of HPV reporting over a 20 year time period.

There are two exceptions to the MDH HPV definition that would allow for a chemical to still be listed as HPV on the 2016 CHC list. The first exception is for chemicals that were HPV on the previous CHC lists but had their 2012 CDR national production volume listed as 'withheld'. As long as at least three of the four reporting cycles from 1994 to 2006 show national production volumes above one million pounds, MDH still considers a chemical with 2012 national production volume data withheld, to be an HPV chemical. This exception only applies to chemicals already having HPV status on previous CHC lists. A chemical cannot be named HPV on the 2016 CHC list for the first time if its most recent reporting year (2012) production volume data is 'withheld'. This same exception does not hold for chemicals that had no national production volume data reported in the 2012 cycle. MDH considers no reported data as being zero pounds of national production volume, whereas 'withheld' is considered an unknown amount.

The second exception for HPV chemical listings is for inorganic chemicals. Inorganic chemicals were first required to be reported to the EPA in 2006 and therefore many inorganic chemicals do not have national production volume data before 2006. On the original 2010 and updated 2013 CHC lists, inorganic chemicals that had national production volumes greater than one million pounds on the 2006 reporting cycle were considered HPV chemicals. For the 2016 update, inorganic chemicals on the CHC list need to have national production volumes greater than one million pounds in both the 2006 and 2012 reporting cycles or they needed to previously have HPV status on the CHC list for their 2006 national production volume and their 2012 volume is 'withheld' (similar to first exception).

After analyzing the chemicals already on the CHC list and the chemicals that will be added to or removed from the CHC list, 457 chemicals are listed as HPV chemicals on the 2016 CHC list. The 2013 CHC list had 443 HPV chemicals and 24 of those chemicals no longer meet the MDH HPV definition. These 24 chemicals remain on the 2016 CHC list but had their HPV status removed. One chemical that is being removed entirely from the CHC list, nitroglycerin, was an HPV chemical. So in total, through chemicals losing HPV status or chemicals being completely removed from the CHC list, HPV status was removed for 25 chemicals.

Of the 24 chemicals still on the 2016 CHC list that no longer have HPV status, half are because their 2012 national production volume data is less than one million pounds. The other twelve are no longer HPVs because they had no national production volume data reported in the 2012 CDR.

HPV status was added to 28 chemicals already on the CHC list. Of the new chemicals being added to the CHC list in 2016, 11 of them are HPV chemicals. This results in the addition of 39 chemicals having HPV status on the 2016 CHC list that did not previously have HPV status. For a list of chemicals having HPV status added or removed see Appendix A, tables 1 and 2.

It should be noted that 19 of the 28 chemicals having HPV status added in 2016 actually met the original HPV definition in 2010 and should have been listed as HPV on the previous CHC lists. Some of these 19 chemicals had their 2012 CDR data withheld but were given HPV status (under the first exception discussed above) because they should have been considered HPV chemicals previously.

The first exception for HPV chemicals already on the CHC list that had their 2012 national production volumes withheld, affected 86 of the now 457 HPV chemicals. One of those 86 chemicals, hexabromocyclododecane, is on the PC list. This was the only chemical on the PC list that was slightly affected by the update of HPV chemicals and it still retains its HPV and PC list status. The other eight priority chemicals had 2012 national production volumes above one million pounds and retained their HPV statuses.

The second exception for inorganic chemicals affected 35 chemicals on the 2016 CHC list. Of those 35 chemicals, 31 of them have national production volumes above one million pounds in both 2006 and 2012 and only two chemicals had 2006 volumes above one million pounds but had 2012 volumes withheld. These 33 inorganic chemicals will retain their HPV status on the 2016 CHC list. Two other inorganic chemicals had their HPV status removed due to either no national production volume data reported in 2012 (arsenic oxide) or because their 2012 volume was less than one million pounds (boron).

Chemicals Added or Removed

Part of the 2016 CHC list update considered if any chemicals should be added to or removed from the list. The 2013 update and review of the CHC list focused in large part on the PBT status of chemicals and on reviewing the data and sources used in naming chemicals to the original CHC list in 2010 (Minnesota Department of Health, 2013). For the 2016 update, MDH focused

on updating the HPV status of chemicals on the CHC list, on possible additions of chemicals found on authoritative state, national, and international lists, and on possible removals for chemical uses that fell under statutory exemptions for the CHC list in Minnesota Statute, 116.9405 (Minnesota Statutes, 2015).

MDH monitors the work of other states with similar legislation as well as new toxicity literature and updates to authoritative state, national, and international chemical priority lists. For the 2016 CHC list update MDH identified 66 chemicals to be added. Of these 66 chemicals, 53 are from the European Union's European Chemicals Agency (ECHA) list of Substances of Very High Concern (SVHC) which is part of article 59(10) of the Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) regulation (European Chemicals Agency, 2016).

The REACH regulation is a specific source named in Minnesota Statute 116.9402, paragraph c, as a potential source to use when considering chemicals for the CHC list. As of June 20th, 2016 the REACH SVHC list contains 169 chemicals that are listed for various reasons including chemicals that are carcinogenic, reproductive toxicants, mutagenic, PBT, very persistent and very bioaccumulative, or have an equivalent level of concern of probable serious effects on human health and/or the environment (European Chemicals Agency, 2016). MDH first compared the SVHC list to the 2013 CHC list and found around 80 chemicals from the SVHC list that were not on the CHC list. Next, MDH worked to identify the uses/applications of these chemicals to determine if any fell under the statutory exemptions of section 116.9405. Sources used for this process were ECHA support documents for listings of chemicals to the SVHC list as well as the TOXNET databases which are maintained by the U.S. National Library of Medicine (U.S. National Library of Medicine, 2016). Chemicals which had a use exemption (such as pharmaceutical) were not added to the CHC List. Also, chemicals for which use/application information could not be found were not added to the 2016 CHC list but were flagged for later review during future list updates. The remaining 53 chemicals were added to the 2016 CHC list.

A similar process was followed for other authoritative lists reviewed during this 2016 update. The reviewed authoritative lists for the 2016 CHC update included:

- California Proposition 65 List (California Environmental Protection Agency, 2016)
- International Agency for Research on Cancer (IARC) Monographs (World Health Organization, 2016)
- National Toxicology Program Report on Carcinogens (U.S. Department of Health and Human Services, 2016)
- REACH SVHC (European Chemicals Agency, 2016)
- Washington State Chemicals of High Concern to Children (Washington Department of Ecology, 2016)

The 2016 review of these authoritative lists looked at all chemicals named to each list followed by a review of the chemicals not already on the CHC list. The slight exception to this was for the IARC Monographs list for which only chemicals listed as carcinogens class 1, 2A, or 2B by IARC (chemicals considered at least possibly carcinogenic) were reviewed. This was slightly different from the rapid review performed for the 2013 CHC update. The 2013 CHC update only looked at

chemicals that had been added to the reviewed authoritative lists between the years 2010 and 2013. A detailed table of chemicals added to the 2016 CHC list including their chemical abstract service registry number (CAS RN), authoritative source, and toxicological reason for listing can be found in Appendix B.

The update of the 2016 CHC list also included a rapid review of chemicals already on the CHC list to determine if they should be removed from the list. This part of the review focused on searching the CHC list for exempt product uses/applications as named in Minnesota Statute 116.9405 such as food and pharmaceutical products. MDH felt it was possible that some chemicals meeting these use exemptions were still present on 2013 CHC lists due to the large size of the list and due to the reliance on the state of Maine's 2009 CHC list which was used as a starting point for the original MDH CHC list in 2010. While Maine's requirements for their CHC list were similar to that of Minnesota's, time constraints for the original creation of the Minnesota CHC list made it difficult to review each chemical's use profile. This type of review of chemical use as well as reviews for updated toxicity information, is an ongoing effort of the Toxic Free Kids program. Through this rapid review MDH identified 28 chemicals that will be removed from the 2016 CHC list and a table with these chemicals can be found in Appendix C.

Future Activities

The following section briefly describes some of the future work activities MDH plans related to the CHC list and Toxic Free Kids program as a whole. This includes review of the priority chemical list, participation in a new interagency work group focused on various chemical policy related projects, and updates to the MDH Toxic Free Kids website combined with expanded education and outreach efforts.

Priority Chemical List

The 2009 legislation, known as the Toxic Free Kids Act, required MDH to create two chemical lists. The first list was the CHC list and the second list was the Priority Chemical (PC) list. The PC list is built from the CHC list and is defined in Minnesota Statute 116.9403 (Minnesota Statutes, 2015):

- (a) The department, after consultation with the [Minnesota Pollution Control] agency, may designate a chemical of high concern as a priority chemical if the department finds that the chemical:
 - (1) Has been identified as a high-production volume chemical by the United States Environmental Protection Agency; and
 - (2) Meets any of the following criteria:

- (i) The chemical has been found through biomonitoring to be present in human blood, including umbilical cord blood, breast milk, urine, or other bodily tissues or fluids;
- (ii) The chemical has been found through sampling and analysis to be present in household dust, indoor air, drinking water, or elsewhere in the home environment; or
- (iii) The chemical has been found through monitoring to be present in fish, wildlife, or the natural environment.

(b) By February 1, 2011, the department shall publish a list of priority chemicals in the State Register and on the department's Internet Web site and shall update the published list whenever a new priority chemical is designated.

The original and current PC list consists of the following nine chemicals:

- Bisphenol A (BPA)
- Butyl benzyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Di (2-ethylhexyl) phthalate (DEHP)
- Decabromodiphenyl ether (decaBDE)
- Hexabromocyclododecane (HBCD)
- Lead
- Cadmium
- Formaldehyde

After creating the 2010 PC list, the TFK program nominated all nine chemicals to the MDH Contaminants of Emerging Concern (CEC) program. The CEC program reviews substances that have been released to, found in, or have the potential to enter Minnesota waters. The substances reviewed in this program also pose a real or perceived health threat, have new or changing health or exposure information, or do not have a Minnesota human health-based guidance value. Since their nominations, five of the nine priority chemicals have gone through a full CEC review. These five chemicals, BPA, BBP, DBP, DEHP, and cadmium now have a Minnesota health-based guidance value for exposure from water ingestion. One other PC, formaldehyde, already had a Minnesota health-based guidance value developed in 1994. The remaining priority chemicals are on the CEC nominations list for future consideration (for more information on the CEC program visit www.health.state.mn.us/cec).

In 2013 MDH began reviewing one candidate chemical, tris (1, 3-dichloro-2-propyl) phosphate (TDCPP), and one candidate chemical group, nonylphenol including its ethoxylates, for addition to the PC list. During this review, MDH and its state partners decided that a new PC list prioritization framework should be developed to ensure consistency in naming new chemicals to the PC list. This process is ongoing and MDH will continue to work with its state agency partners to finalize this process before naming any new chemicals to the PC list. At this time no new chemicals have been named to the PC list and the above mentioned chemical and chemical group remain candidates for the PC list. Any updates to the prioritization process and to the PC

list will be published on the MDH website at: Toxic Free Kids: Priority Chemicals (www.health.state.mn.us/divs/eh/hazardous/topics/toxfreekids/priority.html). Interested parties can monitor changes by visiting the website and signing up to receive e-mail updates (upper right of website) of new activities and postings.

New Interagency Workgroup

In the spring of 2016 MDH, MPCA, and the Minnesota Department of Commerce formally established the Chemicals in Products Interagency Team (CPIT). From article II of the CPIT charter, the goal of CPIT is:

“To reduce the amount of chemical hazards in products, their dispersion into Minnesota’s environment, and their presence in the bodies of Minnesota citizens, especially our most vulnerable communities” (Chemicals in Products Interagency Team, 2016).

The three agencies will work in partnership to:

- Monitor chemical hazards in consumer and business-to-business products, humans, and the environment;
- Educate citizens, vulnerable communities, and businesses about chemical hazards and how to avoid them if they so choose; and to
- Accelerate the development and use of safer alternatives by businesses, state government, and citizens, enhancing Minnesota business growth wherever possible

Through CPIT, MDH and the other member agencies hope to better align their work efforts on the many issues and projects relating to chemicals in consumer and commercial products. CPIT creates a formal process for sharing and working across agencies on these related topics and projects.

One of the first project areas that CPIT is focusing on is a cross-agency review of hazardous and toxic chemical and product restriction statutes in Minnesota. This review will confirm which agencies are responsible for oversight of individual restriction statutes as well as clarify compliance and enforcement authorities. Minnesota has 17 hazardous chemical and product restriction statutes, dating from 1976 through 2015, which either restrict the use of chemicals in certain products to specific levels or completely ban their use. Of these 17, nine restrictions involve chemicals on the PC list. For a list of all 17 restrictions that CPIT is reviewing see Appendix D.

Education and Outreach

There has been a growing level of concern in the public about potential exposures to harmful and toxic chemicals in everyday life. This is evident in MDH interactions with the public and in the number of chemical policy related bills that are proposed and passed, not just in

Minnesota, but across the United States each year. In recognition of this, MDH plans to refocus some of its Toxic Free Kids program effort into education and outreach around chemicals in products. Past instances of education and outreach efforts have involved MDH chemical safety presentations at local summer day camps for children as well as responding to individual requests for information from concerned citizens.

Moving forward, through its membership in CPIT, MDH plans to align its efforts on education and outreach with that of the other member agencies to ensure consistent messaging. Plans for updating MDH chemical websites, including the Toxic Free Kids website, to be more user friendly is in preliminary stages and will be part of this renewed focus.

Summary

The 2016 update of Minnesota's CHC list focused on HPV chemical status and on potential additions or removals of chemicals on the CHC list. The 2016 CHC list will go from having 443 HPV chemicals to 457 HPV chemicals. This update also resulted in the removal of 28 chemicals and the addition of 66 chemicals to the CHC list, changing the overall size of the CHC list from 1,731 chemicals in 2013 to 1,769 in 2016.

Moving forward, MDH is developing a prioritization framework that will provide consistency and transparency in naming new chemicals to the PC list. MDH will continue to work with its state agency partners throughout this process. At this time, the chemical TDCPP and chemical group of nonylphenols and its ethoxylates are still considered candidate chemicals for the PC list.

The formation of the Chemicals in Products Interagency Team, CPIT, is a collaborative step that will allow for increased effectiveness across state agencies when working on various projects related to chemicals in the human environment. MDH is excited to work with its fellow agencies (Minnesota Department of Commerce and MPCA), and this workgroup will aid all three agencies in efficiently using resources to serve the people of Minnesota.

MDH continues to monitor the status of chemical hazard legislation in other states. In particular, chemical hazard legislation of the states of Maine, Vermont, and Washington are monitored closely because of similar chemical policy mandates to that of Minnesota's. MDH monitors the status of chemical legislation across the country to understand the similar actions being taken by other states and to gather information on the direction of chemical policies within the United States.

This is a time of change for chemical policy in the United States as is evident with the recent amendment of the federal Toxic Substance Control Act (TSCA) via the signing into law of the Frank R. Lautenberg Chemical Safety for the 21st Century Act. This is the first major update to TSCA since its original passage in 1976 and includes much needed improvements such as the mandatory evaluation of new chemicals, phased evaluation of priority existing chemicals, and increased public transparency for chemical information (U.S. Environmental Protection Agency,

2016a). These improvements and amendments should help to further protect both the public health and the environment and ushers in a new era of chemical policy in the United States. MDH will be monitoring how this amendment affects chemical policy in Minnesota as well as across the United States. State restriction statutes in place prior to 2016 remain in effect, and as before, TSCA will not apply to imported articles (consumer products), so Minnesota and other states will continue to play a role in overseeing the safety of chemicals in products.

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Appendix A – High Production Volume Chemical Tables

Table 1: 2016 CHC List Chemicals Adding High Production Volume Status

	CAS RN	Chemical Name	New Chemical on CHC List
1	67-56-1	Methanol	
2	75-12-7	Formamide	
3	75-35-4	1,1-Dichloroethylene (Vinylidene chloride)	
4	75-52-5	Nitromethane	
5	78-87-5	1,2-Dichloropropane	
6	78-93-3	Methyl ethyl ketone	X
7	79-46-9	2-Nitropropane	
8	94-75-7	2,4-Dichlorophenoxyacetic acid (2,4-D)	
9	98-83-9	α -Methyl styrene	
10	106-88-7	1,2-Epoxybutane	
11	106-94-5	1-Bromopropane	
12	107-05-1	Allyl chloride	
13	107-21-1	Ethylene glycol	X
14	107-30-2	Chloromethyl methyl ether (technical grade)	
15	108-10-1	Methyl isobutyl ketone (MIBK)	
16	111-42-2	Diethanolamine	
17	118-96-7	2,4,6-Trinitrotoluene (TNT)	
18	120-83-2	2,4-Dichlorophenol	

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	CAS RN	Chemical Name	New Chemical on CHC List
19	126-99-8	Chloroprene	
20	127-19-5	N,N-dimethylacetamide (DMAc)	
21	409-21-2	Silicon Carbide whiskers	X
22	513-79-1	Cobalt (II) carbonate	X
23	764-41-0	1,4-Dichloro-2-butene	
24	1303-86-2	Diboron trioxide	X
25	1314-41-6	Lead tetroxide (Orange Lead)	X
26	1317-36-8	Lead monoxide (Lead Oxide)	X
27	5989-27-5	cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)-	
28	12070-12-1	Cobalt metal with tungsten carbide	X
29	12202-17-4	Tetralead trioxide sulphate	X
30	21850-44-2	benzene, 1,1'-(1-methylethylidene)bis[3,5-dibromo-4-(2,3-dibromopropoxy)-	
31	25155-23-1	Trixylyl phosphate	X
32	28553-12-0	Diisononyl phthalate (DINP)	X
33	41556-26-7	Decanedioic acid, bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester	
34	68307-99-3	Tail gas (petroleum), catalytic polymn. naphtha fractionation stabilizer; Petroleum gas; [A complex combination of hydrocarbons from the fractionation stabilization products from polymerization of naphtha. It consists predominantly of hydrocarbons having carbon numbers in the range of C1 through C4.]	

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CAS RN	Chemical Name	New Chemical on CHC List
35	68308-09-8 Tail gas (petroleum), light straight-run naphtha stabilizer, hydrogen sulfide-free; Petroleum gas; [A complex combination of hydrocarbons obtained from fractionation stabilization of light straight run naphtha and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.]	
36	68477-72-5 Gases (petroleum), catalytic-cracked naphtha debutanizer bottoms, C3-5-rich; Petroleum gas; [A complex combination of hydrocarbons obtained from the stabilization of catalytic cracked naphtha. It consists of aliphatic hydrocarbons having carbon numbers predominantly in the range of C3 through C5.]	
37	68814-90-4 Gases (petroleum), platformer products separator off; Refinery gas; [A complex combination obtained from the chemical reforming of naphthenes to aromatics. It consists of hydrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C4.]	
38	68919-00-6 Gases (petroleum), dehexanizer off; Petroleum gas; [A complex combination of hydrocarbons obtained by the fractionation of combined naphtha streams. It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.]	
39	68952-80-7 Tail gas (petroleum), straight-run naphtha hydrodesulfurizer; Refinery gas; [A complex combination obtained from the hydrodesulfurization of straight-run naphtha. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C5.]	

Table 2: 2016 CHC List Chemicals Removing High Production Volume Status

	CAS RN	Chemical Name
1	79-92-5	bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- (Camphene)
2	95-65-8	3,4-Dimethylphenol
3	96-24-2	alpha-Chlorohydrin
4	98-07-7	Benzotrichloride
5	99-08-1	m-Nitrotoluene
6	110-80-5	Ethylene glycol monoethyl ether
7	115-27-5	4,7-methanoisobenzofuran-1,3-dione, 4,5,6,7,8,8-hexachloro-3a,4,7,7a-tetrahydro-
8	149-30-4	Mercaptobenzothiazole
9	583-78-8	2,5-Dichlorophenol
10	624-83-9	Methyl isocyanate
11	1303-28-2	Arsenic oxide, arsenic pentoxide, diarsenic pentaoxide
12	3147-75-9	phenol, 2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)-
13	5160-02-1	D&C Red No. 9
14	7440-42-8	Boron
15	8001-58-9	Creosotes
16	8007-45-2	Coal-tars
17	16219-75-3	5-Ethylidene-2-norbornene
18	25321-09-9	benzene, bis(1-methylethyl)-
19	26761-40-0	Di-isodecyl phthalate (DIDP)
20	27554-26-3	1,2-benzenedicarboxylic acid, diisooctyl ester
21	68308-04-3	Tail gas (petroleum), gas recovery plant; Petroleum gas; [A complex combination of hydrocarbons from the distillation of products from miscellaneous hydrocarbon streams. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.]
22	68308-11-2	Tail gas (petroleum), propane-propylene alkylation feed prep deethanizer; Petroleum gas; [A complex combination of hydrocarbons obtained from the distillation of the reaction products of propane with propylene. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.]

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	CAS RN	Chemical Name
23	68308-12-3	Tail gas (petroleum), vacuum gas oil hydrodesulfurizer, hydrogen sulfide-free; Petroleum gas; [A complex combination of hydrocarbons obtained from catalytic hydrodesulfurization of vacuum gas oil and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.]
24	68606-25-7	Hydrocarbons, C2-4; Petroleum gas

Appendix B – Chemicals Added

Table 3: New Chemicals Added to the 2016 CHC List

	CAS RN	Chemical Name	Authoritative List	Toxicological Endpoint
1	71-48-7	Cobalt(II) diacetate	SVHC ³	Carcinogenic and Reproductive
2	78-93-3	Methyl ethyl ketone	WA CHCC ⁴	Developmental
3	79-16-3	N-methylacetamide	SVHC ³	Reproductive
4	107-21-1	Ethylene glycol	Prop 65 ² WA CHCC ⁴	Developmental
5	123-35-3	beta-Myrcene	Prop 65 ²	Carcinogenic
6	142-04-1	Aniline hydrochloride	Prop 65 ²	Carcinogenic
7	202-33-5	Benz[j]aceanthrylene	IARC ¹ 2B	Carcinogenic
8	409-21-2	Silicon carbide whiskers	IARC ¹ 2A	Carcinogenic
9	513-79-1	Cobalt(II) carbonate	SVHC ³	Carcinogenic and Reproductive
10	548-62-9	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)	SVHC ³	Carcinogenic
11	561-41-1	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	SVHC ³	Carcinogenic
12	573-58-0	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	SVHC ³	Carcinogenic
13	605-50-5	Diisopentyl phthalate	SVHC ³	Reproductive
14	632-99-5	Magenta	IARC ¹ 2B	Carcinogenic
15	1303-86-2	Diboron trioxide	SVHC ³	Reproductive

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	CAS RN	Chemical Name	Authoritative List	Toxicological Endpoint
16	1306-19-0	Cadmium oxide	SVHC ³	Carcinogenic and Systemic
17	1306-23-6	Cadmium sulphide	SVHC ³	Carcinogenic and Systemic
18	1314-41-6	Orange lead (lead tetroxide)	SVHC ³	Reproductive
19	1317-36-8	Lead monoxide (lead oxide)	SVHC ³	Reproductive
20	1319-46-6	Trilead bis(carbonate) dihydroxide	SVHC ³	Reproductive
21	1330-43-4	Disodium tetraborate, anhydrous	SVHC ³	Reproductive
22	2058-94-8	Henicosaflluoroundecanoic acid	SVHC ³	Very Persistent and Very Bioaccumulative
23	2832-40-8	C.I. Disperse Yellow 3	Prop 65 ²	Carcinogenic
24	6477-64-1	Lead dipicrate	SVHC ³	Reproductive
25	7632-04-4	Sodium peroxometaborate	SVHC ³	Reproductive
26	7738-94-5	Chromic acid	SVHC ³	Carcinogenic
27	7775-11-3	Sodium chromate	SVHC ³	Carcinogenic and Mutagenic and Reproductive
28	7778-39-4	Arsenic acid	SVHC ³	Carcinogenic
29	7778-50-9	Potassium dichromate	SVHC ³	Carcinogenic and Mutagenic and Reproductive
30	7789-00-6	Potassium chromate	SVHC ³	Carcinogenic and Mutagenic
31	7789-06-2	Strontium chromate	SVHC ³	Carcinogenic

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	CAS RN	Chemical Name	Authoritative List	Toxicological Endpoint
32	7789-09-5	Ammonium dichromate	SVHC ³	Carcinogenic and Mutagenic and Reproductive
33	8012-00-8	Pyrochlore, antimony lead yellow	SVHC ³	Reproductive
34	10124-36-4	Cadmium sulphate (second CAS# listed on SVHC: 31119-53-6)	SVHC ³	Carcinogenic and Mutagenic and Reproductive and Systemic
35	10141-05-6	Cobalt(II) dinitrate	SVHC ³	Carcinogenic and Reproductive
36	10588-01-9	Sodium dichromate (second CAS# listed on SVHC: 7789-12-0)	SVHC ³	Carcinogenic and Mutagenic and Reproductive
37	11103-86-9	Potassium hydroxyoctaoxidizincatedichromate	SVHC ³	Carcinogenic
38	11120-22-2	Silicic acid, lead salt	SVHC ³	Reproductive
39	11138-47-9	Perboric acid, sodium salt	SVHC ³	Reproductive
40	12036-76-9	Lead oxide sulfate	SVHC ³	Reproductive
41	12065-90-6	Pentalead tetraoxide sulphate	SVHC ³	Reproductive
42	12070-12-1	Cobalt metal with tungsten carbide	IARC ¹ 2A	Carcinogenic
43	12141-20-7	Trilead dioxide phosphonate	SVHC ³	Reproductive
44	12202-17-4	Tetralead trioxide sulphate	SVHC ³	Reproductive
45	12578-12-0	Dioxobis(stearato)trilead	SVHC ³	Reproductive
46	12626-81-2	Lead titanium zirconium oxide	SVHC ³	Reproductive
47	13814-96-5	Lead bis(tetrafluoroborate)	SVHC ³	Reproductive

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	CAS RN	Chemical Name	Authoritative List	Toxicological Endpoint
48	15120-21-5	Sodium perborate	SVHC ³	Reproductive
49	15571-58-1	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	SVHC ³	Reproductive
50	17068-78-9	Asbestos (anthophyllite)	IARC ¹ 1	Carcinogenic
51	19438-60-9	Hexahydro-4-methylphthalic anhydride	SVHC ³	Systemic
52	24613-89-6	Dichromium tris(chromate)	SVHC ³	Carcinogenic
53	25155-23-1	Trixylyl phosphate	SVHC ³	Reproductive
54	25550-51-0	Hexahydromethylphthalic anhydride	SVHC ³	Systemic
55	28553-12-0	Diisononyl phthalate (DINP)	Prop 65 ² WA CHCC ⁴	Carcinogenic and Developmental
56	48122-14-1	Hexahydro-1-methylphthalic anhydride	SVHC ³	Systemic
57	49663-84-5	Pentazinc chromate octahydroxide	SVHC ³	Carcinogenic
58	57110-29-9	Hexahydro-3-methylphthalic anhydride	SVHC ³	Systemic
59	62229-08-7	Sulfurous acid, lead salt, dibasic	SVHC ³	Reproductive
60	68515-51-5	1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters	SVHC ³	Reproductive
61	68784-75-8	Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped	SVHC ³	Reproductive
62	69011-06-9	[Phthalato(2-)]dioxotrilead	SVHC ³	Reproductive
63	91031-62-8	Fatty acids, C16-18, lead salts	SVHC ³	Reproductive

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	CAS RN	Chemical Name	Authoritative List	Toxicological Endpoint
64	127087-87-0	4-Nonylphenol, branched and linear, ethoxylated	SVHC ³	Systemic
65	308068-56-6	Carbon nanotubes, multi-walled MWCNT-7	IARC ¹ 2B	Carcinogenic
66	308076-74-6	Silicon carbide, fibrous	IARC ¹ 2B	Carcinogenic

1: International Agency for Research on Cancer (IARC)

2: California Proposition 65 List (Prop 65)

3: Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) – Substances of Very High Concern (SVHC)

4: Washington Department of Ecology – Chemicals of High Concern to Children List (WA CHCC)

Appendix C – Chemicals Removed

Table 4: Chemicals Removed from the 2016 CHC List

	CAS RN	Chemical Name	Pharmaceutical Exemption	Food Exemption
1	54-62-6	Aminopterin	X	
2	55-63-0	Nitroglycerin	X	
3	56-53-1	Diethylstilbestrol	X	
4	57-97-6	7,12-Dimethylbenz(a)anthracene	X	
5	59-05-2	Methotrexate	X	
6	59-87-0	Nitrofurazone	X	X
7	60-56-0	Methimazole	X	
8	62-44-2	Phenacetin	X	
9	64-86-8	Colchicine	X	
10	66-76-2	Dicumarol	X	
11	66-81-9	Cycloheximide	X	
12	77-09-8	Phenolphthalein	X	
13	79-43-6	Dichloroacetic acid	X	
14	79-44-7	Dimethylcarbamoyl chloride	X	
15	154-42-7	Thioguanine	X	
16	298-81-7	8-Methoxypsoralen with ultraviolet A therapy	X	
17	315-22-0	Monocrotaline	X	
18	443-48-1	Metronidazole	X	

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	CAS RN	Chemical Name	Pharmaceutical Exemption	Food Exemption
19	645-05-6	Altretamine	X	
20	684-93-5	N-Nitroso-N-methylurea	X	
21	3688-53-7	AF-2;[2-(2-furyl)-3-(5-nitro-2-furyl)]acrylamide		X
22	3771-19-5	Nafenopin	X	
23	14797-65-0	Nitrite(1)-		X
24	18883-66-4	Streptozocin (streptozotocin)	X	
25	33069-62-4	Paclitaxel	X	
26	53973-98-1	Poligeenan		X
27	65195-55-3	Avermectin B1	X	
28	76180-96-6	IQ (2-Amino-3-methylimidazo[4,5-f]quinoline)		X

Appendix D – Minnesota Chemical/Product Restriction Statutes

Table 5: Chemical and Product Restriction Statutes in Minnesota

Chemical(s) and Product/Product Category	Minnesota Statute §	Year Enacted	Priority Chemical
PCBs ; Prohibited Use	116.37	1976	
Chlorofluorocarbon Sales Ban	116.731	1988	
Toxics in Packaging (total of Lead, Cadmium, Mercury, Hexavalent Chromium <100 ppm)	115A.965	1991	X
Ink, Dye, Pigment, Paint, or Fungicide Containing Listed Metals (Lead, Cadmium, Mercury, or Hexavalent Chromium)	115A.9651	1991	X
Mercury Product Sales, Use, Labeling, Disposal, Recycling Requirements	116.92	1992 2014	
Children’s Jewelry - Lead Prohibited	325E.389	2007	X
Products Containing pentaBDE or octaBDE >1000 ppm State procurement options for products not containing PBDEs	325E.386 325E.387	2007	
Elemental Mercury Banned in Schools	121A.33	2007	
Bisphenol A in Children's Products	325F.173	2009	X
Cadmium in Children's Jewelry	325E.3891	2010	X
Bisphenol A in Containers for Infant Formula, Baby Food, or Toddler Food	325F.174	2013	X
Coal Tar in Pavement Sealants	116.202	2013	
Methyl Methacrylate Liquid Monomers & Fumigants (Formalin) in Cosmetology	155A.355	2013	
Formaldehyde in Children’s Products	325F.176 325F.177	2013 2014	X

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Chemical(s) and Product/Product Category	Minnesota Statute §	Year Enacted	Priority Chemical
Lead & Mercury in Wheel Weights and Other Balancing Products	116.931	2014	X
Triclosan in Consumer Products for Sanitizing or Hand and Body Cleansing	145.945	2014	
Four Flame Retardants in Children’s Products & Upholstered Residential Furniture (HBCD, decaBDE, TDCPP, TCEP)	325F.071	2015	X

Note - The following abbreviations are used above in table 5:

- decaBDE – Decabromodiphenyl ether
- HBCD – Hexabromocyclododecane
- octaBDE – Octabromodiphenyl ether
- PBDEs – Polybrominated diphenyl ethers
- PCBs – Polychlorinated biphenyls
- pentaBDE – Pentabromodiphenyl ether
- ppm – Parts per million
- TCEP – Tris (2-chloroethyl) phosphate
- TDCPP – Tris (1,3-dichloro-2-propyl) phosphate