January 26, 2023

Petition submitted via e-mail and UPS

PETITION TO REQUEST HEALTH AND ENVIRONMENTAL TESTING AND REGULATION ON POLYVINYL ALCOHOL UNDER THE TOXIC SUBSTANCES CONTROL ACT AND AN UPDATE TO THE CHEMICAL SAFETY STATUS OF POLYVINYL ALCOHOL ON THE EPA'S SAFER CHEMICAL INGREDIENTS LISTS

Michael S Regan, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W. Washington, D.C. 20460
Regan.Michael@epa.gov

Dear Administrator Regan,

Please accept the following petition on behalf of Blueland and Plastic Pollution Coalition joined by the following leading 15 nonprofit organizations fighting plastic pollution and climate change: Beyond Plastics, Plastic Oceans International, The Shaw Institute, Lonely Whale, 5 Gyres, GAIA (Global Alliance for Incinerator Alternatives), Oceanic Global Foundation, The Last Beach Cleanup, Rio Grande International Study Center, Inland Ocean Coalition, Occidental Arts and Ecology Center, Turtle Island Restoration Network, Friends of the Earth, Surfrider and Made Safe.

This petition is submitted under section 21 of the Toxic Substances Control Act (TSCA) and the EPA Safer Choice Standards and Safer Chemical Ingredients Lists from the EPA Safer Choice Program. This petition requests that the EPA require human health and environmental health and safety testing for Polyvinyl Alcohol, also known as PVA or PVOH, specifically PVA used in laundry and dishwasher detergent pods and sheets as these are product categories relevant to the EPA Safer Choice program. The petition requests an order under section 4 of TSCA requiring the manufacturers and processors of PVA who are part of the EPA Safer Choice Program, have products with the EPA Safer Choice certification, and who are seeking an EPA Safer Choice certification for pods or sheets products, to fund and conduct this testing under the guidance and direction of independent, third-party scientists. The petition also requests that until such testing is completed and reviewed by the EPA, the EPA update the status of PVA on the EPA Safer Chemical Ingredient List from a "green circle" chemical to a "gray square" to more accurately reflect that more information is needed before human and environmental health impacts can be determined.

Thank you for your consideration.

Signed on behalf of our Blueland, Plastic Pollution Coalition and our co-signed partners.

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Section 1: Executive Summary

This petition is filed under section 21 of the Toxic Substances Control Act (TSCA) and the Safer Choice Standards and Safer Chemical Ingredients Lists from the EPA Safer Choice Program[1]. The petition requests that the Environmental Protection Agency (EPA) require health and environmental safety tests of Polyvinyl Alcohol (PVA, also known as PVOH) used as a plastic film in dishwasher and laundry pods and sheets. The petition requests that the EPA issue an order according to section 4 of the TSCA to require that such testing be funded and conducted by PVA manufacturers and processers who are part of the EPA Safer Choice Program, have products with the EPA Safer Choice certification, and who are seeking an EPA Safer Choice certification for pods or sheets products.[2] This petition also requests that the status of PVA be updated on the Safer Chemical Ingredients List, from a "green circle" to a "gray square" until the EPA can complete a full review of the requested health and environmental safety tests.

PVA is a synthetic, petroleum-derived polymer that can contribute to plastic pollution in oceans, waterways and soil, and recent research suggests that it may negatively impact ecosystems and the food and water supply.[3] PVA also has the potential to exhibit bioaccumulative properties that could carry toxic chemicals and carcinogens up through the food chain.[4] Recent studies have even showed Polyvinyl Alcohol particles to be present in human breastmilk and drinking water.[5] [6]

PVA has many applications, but one fast growing use for PVA, and particular concern for the EPA Safer Choice program, is its use in dishwasher and laundry detergent pods and sheets. Detergent pods are wrapped in a thin layer of PVA plastic film and detergent sheets are woven together with PVA. Laundry and dishwasher pods are a popular format for consumers, with an estimate of over 20 billion PVA wrapped laundry and dishwasher pods used every year in the

[1] 15 U.S.C. 53 §2603. Testing of chemical substances and mixtures http://uscode.house.gov/view.xhtml?path=/prelim@title15/chapter53&edition=prelim

[2] US EPA, OCSPP. "TSCA Section 4 Test Orders." Overviews and Factsheets, October 9, 2020. https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/tsca-section-4-test-orders.

[3] Rolsky C, Kelkar V. Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate. *International Journal of Environmental Research and Public Health*. 2021; 18(11):6027. https://doi.org/10.3390/ijerph18116027

[4] *Ibid.*

[5] Ragusa, Antonio, Valentina Notarstefano, Alessandro Svelato, Alessia Belloni, Giorgia Gioacchini, Christine Blondeel, Emma Zucchelli, et al. "Raman Microspectroscopy Detection and Characterisation of Microplastics in Human Breastmilk." *Polymers* 14, no. 13 (June 30, 2022): 2700. https://doi.org/10.3390/polym14132700.

[6] V. C. Shruti et al., "Free, but Not Microplastic-Free, Drinking Water from Outdoor Refill Kiosks: A Challenge and a Wake-up Call for Urban Management," *Environmental Pollution* 309 (September 15, 2022): 119800, https://doi.org/10.1016/j.envpol.2022.119800.

U.S. alone.[7] Regardless, few consumers realize that the PVA film surrounding pods is actually a petroleum-based plastic.[8] For many, once the plastic pod is put into the washing machine or dishwasher, it is out of sight and out of mind; however, there are potential health and environmental implications. Consumers look to initiatives like the EPA Safer Choice program to evaluate whether their products are safe for themselves and the environment.[9] EPA Safer Choice analyzes ingredients, product performance and packaging to ensure that products with an EPA Safer Choice label are safer for individuals and pets, as well as workers health and the environment.[10]

PVA is currently on the Safer Choice Program's Safer Chemical Ingredients List with a green circle, suggesting to consumers that the PVA plastic film encasing laundry and dishwasher pods is safe for people and the environment, and does not have any adverse impacts on the planet. Nevertheless, research shows that ~75% of plastic pods just from laundry and dishwasher detergents remain intact throughout conventional, wastewater treatment, and may persist in our environment, waterways, oceans and soils.[11] PVA is a water-soluble thermoplastic polymer that has the ability to biodegrade in a set of specific conditions and, when used in washing machines and dishwashers, is designed to go down drains.[12] PVA dissolves and is flushed into municipal wastewater but does not fully biodegrade due to the conditions in most wastewater treatment plants (WWTPs).[13] From there, it flows from municipal wastewater into our water systems and soils.[14] For PVA to completely biodegrade, it requires extremely specific conditions to be met in WWTPs, including a particular length of time spent in WWTPs and the presence of certain, acclimated microorganisms needed to degrade PVA completely.[15] If all conditions are not met, intact PVA plastic is released into wastewater effluent which goes into soil, waterways, oceans and beyond. Since these conditions are rarely met, if ever, studies estimate that over ~75% of intact PVA plastic is released back into the environment[16]. Given PVA's potential for persistence, and the unknown impacts it has on the environment, the status of PVA on the EPA Safer Chemical List should be updated from a "green circle" to a "gray square" until extensive health and environmental safety testing can be completed, and PVA's effect on the environment is determined.

Section 2: The Petitioners

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[7] Rolsky C, Kelkar V. *2.*
[8] Rolsky C, Kelkar V. *2.*
[9] US EPA, OCSPP. "Safer Choice Standard and Criteria." Overviews and Factsheets, March 7, 2014. https://www.epa.gov/saferchoice/standard
[10] *Ibid.*
[11] Rolsky C, Kelkar V. 1
[12] Doble, Mukesh, and Anil Kumar. "CHAPTER 9 - Degradation of Polymers." In *Biotreatment of Industrial Effluents*, edited by Mukesh Doble and Anil Kumar, 101–10. Burlington: Butterworth-Heinemann, 2005. https://doi.org/10.1016/B978-075067838-4/50010-5.
[13] *Ibid. 1*
[14] *Ibid. 1*
[15] *Ibid. 1*
[16] *Ibid. 9*

This petition is submitted by Blueland and Plastic Pollution Coalition, and co-signed by 15 nonprofit organizations fighting plastic pollution and climate change: Beyond Plastics, Plastic Oceans International, The Shaw Institute, Lonely Whale, 5 Gyres, GAIA (Global Alliance for Incinerator Alternatives), Oceanic Global Foundation, The Last Beach Cleanup, Rio Grande International Study Center, Inland Ocean Coalition, Occidental Arts and Ecology Center, Turtle Island Restoration Network, Friends of the Earth, Surfrider and Made Safe. Blueland is a consumer-packaged goods company that aims to eliminate single-use plastic packaging from everyday products, including cleaning and personal care products. Plastic Pollution Coalition is a non-profit communications and advocacy organization that collaborates with an expansive global alliance of organizations, businesses, and individuals to create a more just and equitable world free of plastic pollution and its toxic impacts. Beyond Plastics, Plastic Oceans International, The Shaw Institute, Lonely Whale, GAIA (Global Alliance for Incinerator Alternatives), Oceanic Global Foundation, The Last Beach Cleanup, Rio Grande International Study Center, Inland Ocean Coalition, Occidental Arts and Ecology Center, Turtle Island Restoration Network, Friends of the Earth and 5 Gyres are non-profit organizations dedicated to eliminating plastic pollution and protecting the planet from the harms of plastic and other destructive activities on the environment. Made Safe is a third-party certification organization that aims to help businesses achieve high standards in their practices and with their products as it relates to human and environmental health.

Section 3: Relevant Background Information on Plastic Pollution

In the last 30 years, plastic consumption has quadrupled.[17] In 2019, 2.6 million tons of plastic waste ended up in oceans and waterways.[18] Studies show by 2050, there will be more plastic, by weight, in the ocean than fish.[19] Plastic pollution can inflict substantial harm to aquatic and marine environments – globally, 800 species of animal are impacted by marine debris, 100% of marine turtle species have been found to ingest plastic pieces along with 59% of whale, 36% of seal and 40% of seabird species examined.[20]

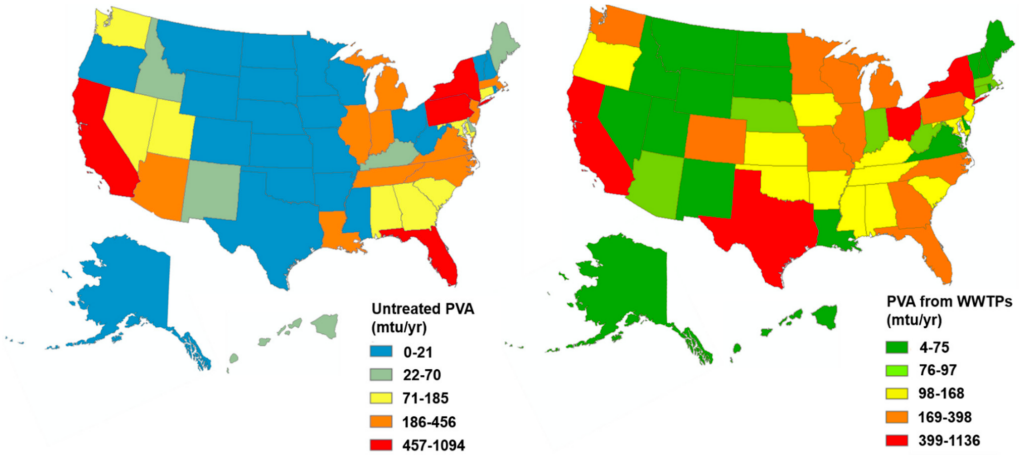
Microplastics are tiny pieces of plastic debris. There is no universally agreed upon size definition for microplastics, though many use plastics less than 5mm in diameter as the guidance.[21] Microplastics have been linked to environmental and human health concerns.[22] Recently,

[17] "Plastic Pollution Is Growing Relentlessly as Waste Management and Recycling Fall Short, Says OECD." Accessed July 21, 2022. https://www.oecd.org/newsroom/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm.
[18] *Ibid*
[19] *Ibid.*
[20] MBRCtheocean. "Shocking Plastic Statistics." Accessed July 21, 2022. https://www.mbrctheocean.com/pages/shocking-plastic-statistics.
[21] US Department of Commerce, National Oceanic and Atmospheric Administration. "What Are Microplastics?" Accessed July 22, 2022. https://oceanservice.noaa.gov/facts/microplastics.html.
[22] *Ibid.*

microplastics have been found in the human bloodstream and even in human placentas and breastmilk.[23] These tiny pieces of plastic, as well as nanoplastics (which are even smaller), are recognized as a harmful ocean contaminant.[24] Due to their tiny size, they are easily ingested by marine animals, and they also have been found in human food and water sources.[25]

Section 4: PVA Treatment, Pollution and Potential Harms on The Environment

PVA is a synthetic, petroleum-based plastic polymer found in many, everyday products and has become a popular plastic used in cleaning and personal care products.[26] PVA is often found in household items as a thin plastic wrapping, encasing single-dose detergents or woven into laundry detergent sheets. PVA is also increasingly being used in other cleaning and personal care products, such as body washes and toilet cleaners, and is designed to go down drains and into water systems. A recent study published in the *International Journal of Environmental Research and Public Health* titled, "Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate", shows that while PVA does solubilize, it does not necessarily biodegrade. In the U.S., an estimated 61% of PVA goes to WWTPs, and an estimated 37% remains untreated. In total, Rolsky and Kelkar estimate that ~75% of PVA from dishwasher and laundry pods persists through conventional wastewater treatment, passing into waterways and ecosystems beyond.[27] In addition to environmental persistence, similar to other petroleum-based plastic, PVA could bioaccumulate and has the potential to absorb dangerous contaminants and move them up the food chain. This requires further research.[28]



[23] Ragusa, Antonio, Alessandro Svelato, Criselda Santacroce, Piera Catalano, Valentina Notarstefano, Oliana Carnevali, Fabrizio Papa, et al. "Plasticenta: First Evidence of Microplastics in Human Placenta." *Environment International* 146 (January 2021): 106274. https://doi.org/10.1016/j.envint.2020.106274.
[24] Ibid.
[25] Lim, XiaoZhi. "Microplastics Are Everywhere — but Are They Harmful?" *Nature* 593, no. 7857 (May 4, 2021): 22–25. https://doi.org/10.1038/d41586-021-01143-3.
[26] Rolsky and Kelkar, "Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate." 2
[27] *Ibid. 1*
[28] *Ibid. 12.*

Figure 3. from Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate showing the amount of treated and untreated PVA released into the environment in the U.S. in metric ton unit/ year

PVA Degradability Process

PVA from laundry and dishwasher pods and sheets goes from consumer households to WWTPs. Dissolved PVA enters WWTPs but ~75% exits WWTPs intact, which is thought to pollute waterways and soil beyond.[29] This estimate is based on a conventional WWTP process. Facilities with advanced treatment processes may have different degradation rates. PVA goes through the following phases in conventional wastewater treatment plants:

Phase 1: Primary treatment:
In the primary treatment phase, large solids are separated from the wastewater that has entered the facility. In this phase, dissolved PVA is not typically separated from the wastewater due to its hydrophilic properties.[30]

Phase 2: Secondary treatment
If PVA were to biodegrade, it would likely take place in the secondary treatment phase. During the secondary treatment phase, PVA interacts with bacteria and microbes that typically break down biological waste in the wastewater. In conventional WWTPs within the U.S., specific PVA-adapted bacteria and microbes are needed to aid in the near to complete degradation of PVA, though they are not likely present.[31]

If those microbes are present, the PVA in wastewater rarely encounters the microbes for long enough for the PVA to fully degrade. It is estimated that PVA needs to interact with the proper microbes for seven days, and typically wastewater remains in a conventional WWTP for two to three days.[32]

Phase 3: Tertiary treatment

Once the wastewater has gone through the secondary treatment phase, the final phases are disinfection and filtration. In the disinfection phase, it is possible for remaining PVA to be degraded.[33] However, the technology to execute that degradation is expensive, and hence assumed to be rarely employed in WWTPs within the U.S.[34]

[29] *Ibid.*
[30] *Ibid*
[31] *Ibid.*
[32] *Ibid*
[33] *Ibid*
[34] *Ibid.*

After the three treatment phases, wastewater is released from WWTPs. According to the study, PVA can travel into the environment via effluent or released within biosolids. If released with water, it has the potential to impact our waterways and environment. If released within biosolids, it will travel into landfills, onto soils or be incinerated.[35]

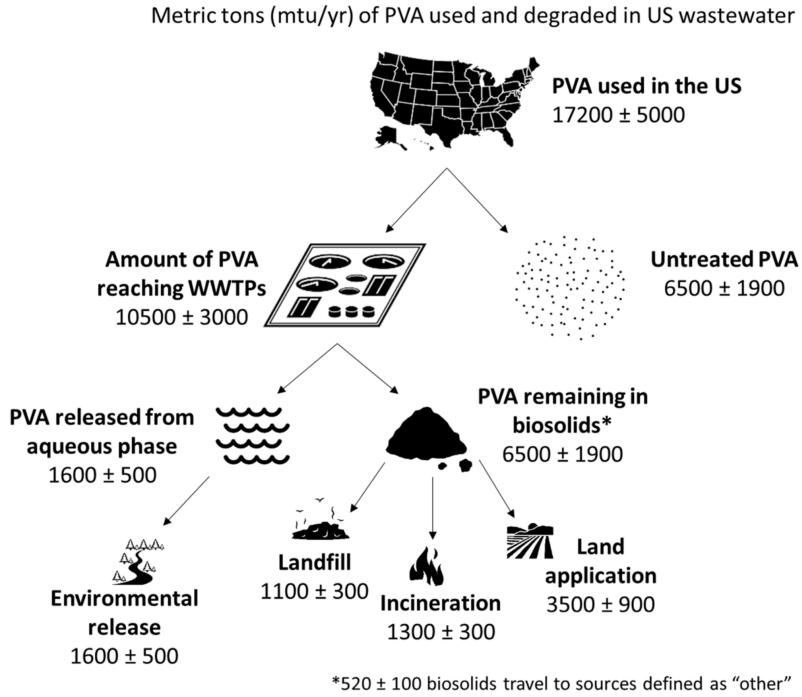


Figure 4 from Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate showing the path of PVA

The ~75% of PVA that remains intact after it leaves the WWTP weighs roughly eight thousand metric tons and is released back into the environment each year, just from plastic laundry and dishwasher pods alone.[36] With PVA's numerous and increasing applications across the cleaning and personal care space, PVA is referred to as one of the most ubiquitous pollutants in waterways and soil.

PVA has various potential impacts on the soil and waterways it pollutes. Further research is still needed to determine the potential harms of PVA in the environment; however, PVA could have the following impacts:

[35] *Ibid.*
[36] Oceans, Plastic. "Detergent Pods Contributing to Plastic Pollution." *Plastic Oceans International* (blog), July 23, 2021. https://plasticoceans.org/detergent-pods-contributing-to-plastic-pollution/.

PVA in soil: PVA that is released from WWTPs as sludge often ends up on land and in soil. This has the potential to affect agricultural yields.[37]

PVA in aquatic environments: A study shows that PVA can alter gas exchanges within aquatic environments. In addition, PVA has exhibited bioaccumulation properties; it has

> "even been documented to mobilize heavy metals from sediments to water resources. Hydrophilic compounds, such as biocides, insecticides, herbicides, flame retardants, corrosion inhibitors, personal care products, and pharmaceuticals are present in wastewater and stormwater. Some of these are proven carcinogens with great aqueous phase stability. As the sorption of organic and inorganic pollutants is not limited to hydrophobic compounds but can also occur with hydrophilic compounds, PVA could act as a vector for transport up the food chain, similarly to more conventional plastics."[38]

Section 5: Current Research on PVA Biodegradability and its Deficiencies

PVA as it's used in dishwasher and laundry pods and sheets has been tested to determine biodegradability, and companies that use PVA utilize these tests to defend their use of the material. These tests evaluate the biodegradability of PVA, typically in laboratories, under the most optimal circumstances. In real world scenarios within conventional WWTPs, neither the conditions in the lab nor the amount of time needed for PVA to fully biodegrade are likely to be met. Many of the tests used to determine PVA's biodegradability rely on OECD standards for biodegradability. While OECD biodegradability standards can be an important tool to determine a material's end of life implications, in the case of PVA and current conditions within WWTPs, these tests are insufficient. The following "readily biodegradability" tests and standards have been used by pods and sheets manufactures and processors to justify their use of PVA for detergent pods and sheets.

> **OECD 301 Test Series to determine "readily biodegradability**": "This Test Guideline describes six methods that permit the screening of chemicals for ready biodegradability in an aerobic aqueous medium. The methods are: the DOC Die-Away, the CO2 Evolution (Modified Sturm Test), the MITI (I) (Ministry of International Trade and Industry, Japan), the Closed Bottle, the Modified OECD Screening and the Manometric Respirometry." [39]
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> "A solution, or suspension, of the test substance, well determined/described, in a mineral medium is inoculated and incubated under aerobic conditions in the dark or in diffuse

[37] *Ibid. 12*
[38] *Ibid. 12*
[39] OECD. *Test No. 301: Ready Biodegradability*. Paris: Organisation for Economic Co-operation and Development, 1992. https://www.oecd-ilibrary.org/environment/test-no-301-ready-biodegradability_9789264070349-en.

light. The running parallel blanks with inoculum but without test substance permits to determine the endogenous activity of the inoculum. A reference compound (aniline, sodium acetate or sodium benzoate) is run in parallel to check the operation of the procedures. Normally, the test lasts for 28 days. At least two flasks or vessels containing the test substance plus inoculum, and at least two flasks or vessels containing inoculum only should be used; single vessels are sufficient for the reference compound. In general, degradation is followed by the determination of parameters such as DOC, CO2 production and oxygen uptake. The pass levels for ready biodegradability are 70% removal of DOC and 60% of ThOD or ThCO2 production for respirometric methods. These pass values have to be reached in a 10-d window within the 28-d period of the test."[40]

OECD 310: "This Test Guideline is a screening method for the evaluation of ready biodegradability of chemicals. The test substance, normally at 20 mg C/L, as the sole source of carbon and energy, is incubated (during 28 days normally) in sealed bottles with aerobic condition containing a buffer-mineral salts medium, which has been inoculated with a mixed population of micro-organisms. In order to check the test procedure, a reference substance (aniline, sodium benzoate or ethylene glycol and 1-octanol) of known biodegradability should be tested in parallel. It is recommended that triplicate bottles be analysed after a sufficient number of time intervals. Also at least five test bottles (from test vessels, blank controls, and vessels with the reference substance) are analysed at the end of the test, to enable 95% confidence intervals to be calculated for the mean percentage biodegradation value. The CO2 evolution resulting from the ultimate aerobic biodegradation of the test substance is determined by measuring the Inorganic Carbon (IC) produced in the test bottles in excess of that produced in blank vessels containing inoculated medium only. The extent of biodegradation is expressed as a percentage of the theoretical maximum IC production (ThIC), based on the quantity of test substance added initially. Biodegradation >60% ThIC within the 10-d window in this test demonstrates that the test substance is readily biodegradable under aerobic conditions."[41]

All six tests in the OECD 301 series and the OECD 310 tests evaluate PVA biodegradability mostly in ex-situ conditions. In these settings, PVA is oftentimes exposed to specific PVA-adapted microorganisms, designed to help break down PVA. In addition, these tests are run for 28 days at a time, and to "pass" the OECD standards, the relevant passing value (different depending on the test) must be reached within a 10-d window.

Research that uses the OECD testing procedures mentioned above to justify PVA's biodegradability fails to address critical gaps between the OECD tests and real-world WWTP conditions. First, OECD test methods can only evaluate PVA in a lab setting. Even if studies use sludge from WWTPs to try to mimic WWTP conditions, testing must aim to accurately match

[40] Ibid.
[41] "Test No. 310: Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test) | READ Online," oecd-ilibrary.org, accessed January 18, 2023, https://read.oecd-ilibrary.org/environment/test-no-310-ready-biodegradability-co2-in-sealed-vessels-headspace-test_9789264224506-en.

WWTP environments in terms of microorganism food-to-microorganism ratio, duration of exposure, etc. In real WWTPs, PVA and other organic and inorganic materials are passing through treatment phases as the same time, so microorganisms present must break down many different materials at once, making microorganism breakdown of PVA less efficient.

Second, this research ignores the 10-day testing window, stating that it does not apply to PVA/PVOH that is used in laundry detergent pods and sheets, because it is not "pure" PVA, despite the OECD stated guidelines.[42] In one study, PVA does not pass the OECD 301B threshold to be readily biodegradable until nearly day 20 of the test[43]. Furthermore, PVA that passes through a wastewater treatment facility typically does so within a 2 or 3-day window, making even the 10-day standard to pass the OECD test insufficient for a substantial biodegradation.

Lastly, many of the OECD standards and test methods (notably much of the 301 series) have not been updated since 1992. Significant advances in testing methods and procedures have been made since these guidelines were first implemented.

Section 6: Requested Actions:

Request for Health and Environmental Safety Tests under the Toxic Substances Control Act

Given the potential for PVA to persist in the environment as a harmful plastic pollutant, this petition requests that the EPA require health and environmental safety tests under the Toxic Substances Control Act on PVA and ultimately regulate PVA used in dishwasher and laundry pods and sheets as a toxic substance, pending the results from testing. The Toxic Substances Control Act seeks to protect human health and the environment by empowering the EPA to issue testing requirements for specific chemicals and establish regulations that restrict manufacturing, processing and distribution of chemicals that are determined a health or environmental risk.[44]

The Toxic Substances Control Act from 15 US Code Chapter 53 Subchapter I section 2603 states:

> "If the finds that—
>
> **(A)(i) (I)**the manufacture, distribution in commerce, processing, use, or disposal of a chemical substance or mixture, or that any combination of such activities, may present an unreasonable risk of injury to health or the environment,

[42] Menzies, Jennifer, Ashley Wilcox, Kenneth Casteel, and Kathleen McDonough. "Water Soluble Polymer Biodegradation Evaluation Using Standard and Experimental Methods." *Science of The Total Environment* 858 (February 1, 2023): 160006. https://doi.org/10.1016/j.scitotenv.2022.160006.

[43] Ibid.

[44] US EPA, "Toxic Substances Control Act (TSCA) and Federal Facilities."

(II)there is insufficient information and experience upon which the effects of such manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture or of any combination of such activities on health or the environment can reasonably be determined or predicted, and

(III)testing of such substance or mixture with respect to such effects is necessary to develop such information; or

(ii)(I)a chemical substance or mixture is or will be produced in substantial quantities, and (aa) it enters or may reasonably be anticipated to enter the environment in substantial quantities or (bb) there is or may be significant or substantial human exposure to such substance or mixture,

(II)there is insufficient information and experience upon which the effects of the manufac

ture, distribution in commerce, processing, use, or disposal of such substance or mixture or of any combination of such activities on health or the environment can reasonably be determined or predicted, and

(III)testing of such substance or mixture with respect to such effects is necessary to develop such information; and

(B) in the case of a mixture, the effects which the mixture's manufacture, distribution in commerce, processing, use, or disposal or any combination of such activities may have on health or the environment may not be reasonably and more efficiently determined or predicted by testing the chemical substances which comprise the mixture;

the Administrator shall by rule, or, in the case of a chemical substance or mixture described in subparagraph (A)(i), by rule, order, or consent agreement, require that testing be conducted on such substance or mixture to develop information with respect to the health and environmental effects for which there is an insufficiency of information and experience and which is relevant to a determination that the manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture, or that any combination of such activities, does or does not present an unreasonable risk of injury to health or the environment.[45]"

Due to the unknown dangers that PVA poses to the environment, the EPA has an obligation, under the TSCA, to require testing of PVA and its end of life in marine and aquatic ecosystems, as well as soil environments, to determine the implications for human and environmental health. This petition requests that the EPA issue an order to require PVA pods and sheets manufacturers and processors who are part of the EPA Safer Choice Program, who have products with the EPA Safer

[45]15 U.S.C. 53 §2603. Testing of chemical substances and mixtures

Choice certification, and who are seeking an EPA Safer Choice certification for pods or sheets products, to fund and conduct full environmental and human health tests on both untreated and treated PVA that is released into aquatic, marine and land environments, under Section 4 of the TSCA. We request that these tests are conducted by and under the direction of independent, third-party labs and are reviewed by the EPA.

Request to Update the Status of PVA on the Safer Chemical Ingredients List

In addition to requesting that PVA be tested and ultimately regulated under the TSCA, this petition requests that the status of PVA be updated from a "green circle" to a "gray square" on the Safer Chemical Ingredients Lists until the requested testing is complete.

The EPA Safer Choice Program has the following guidance on polymers:

> "To be acceptable for labeled products, polymers must have low-concern characteristics. Also, the requirements of this section apply to the low molecular weight components of polymers (typically less than 1,000 daltons). Safer Choice encourages the use of degradable polymers whenever possible; only those that do not degrade into CMRs or PBTs (Persistence, Bioaccumulation, Toxins) will be allowed."[46]

If a polymer does break down into PBTs, it should be excluded from the EPA Safer Chemical list. Using the definitions that the Safer Choice programs outline for persistence and bioaccumulation, PVA should be excluded from the EPA Safer Chemical list.

1. Persistence: "The length of time the chemical can exist in the environment before being destroyed (i.e., transformed) by natural processes".[47]

Rolsky and Kelkar's paper demonstrates that there is significant potential for PVA to persist within waterways, oceans and soils after it leaves WWTPs, with ~75% remaining intact post water treatment.[48]

2. Bioaccumulation: "is a process in which a chemical substance is absorbed in an organism by all routes of exposure as occurs in the natural environment, e.g., dietary and ambient environment sources. Bioaccumulation is the net result of competing processes of chemical uptake into the organism at the respiratory surface and from the diet and chemical

[46] "EPA's Safer Choice Criteria for Colorants, Polymers, Preservatives, and Related Chemicals," n.d., 3.
[47] EPA PBT Final Rule [9]
[48] Rolsky and Kelkar, "Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate." 12

elimination from the organism including respiratory exchange, fecal egestion, metabolic biotransformation of the parent compound and growth dilution".[49]

Rolsky and Kelkar cite Chiellini et. al to suggest that PVA has the potential to exhibit bioaccumulation properties, citing its ability to "mobilize heavy metals from sediments to water resources. Hydrophilic compounds, such as biocides, insecticides, herbicides, flame retardants, corrosion inhibitors, personal care products, and pharmaceuticals are present in wastewater and stormwater".[50]

PVA clearly demonstrates the EPA definitions of Persistence and has the potential for Bioaccumulation. Partially degraded PVA might have the potential to interact with or carry PBT chemicals and bioaccumulate them up the food chain. Because of these characteristics, PVA should not be eligible for the polymer exclusion and should be updated to a "gray square" from the EPA Safer Choice List unless it can be proven to be safe.

Lastly, PVA is used in all laundry and dishwasher pods and sheets. Many brands who use PVA market their pods and sheets as "100% biodegradable" and or "100% plastic-free". Both claims are misleading, given that they use PVA, which is a petroleum-based plastic, and is only biodegradable under extremely specific conditions, as the research by Rolsky and Kelkar explains. These can mislead consumers to think these products are better for the environment than they are, when there is still further research needed. Even with further research, claims such as "100% biodegradable" and "100% plastic-free" would not be substantiated. We request that the EPA Safer Choice Program review claims about PVA through the lens of truth in advertising to ensure that consumers have accurate information about PVA and its potential environmental impacts.

Section 7: Conclusion

PVA plastic film is widely used in conventional household and personal care products. It is designed to become a solution when exposed to water before it is flushed down the drain. PVA can be biodegradable in WWTPs when it encounters a set of extremely specific conditions, as cited above. However, as Rolsky and Kelkar found, these conditions are rarely met in the U.S. Instead, ~75% of PVA from laundry and dishwasher pods likely persists in waterways, soil and oceans.[51] Further research is needed to determine the potential hazards that polluted PVA can pose to ecosystems and human health. Given the gravity of the plastic pollution problem and the known impacts of other plastic polymers on the environment, this petition requests the EPA use its authority under TSCA sections 4 and 21 to require PVA pods and sheets manufacturers and

[49] EPA's Safer Choice Program Master Criteria for Safer Ingredients
[50] Chiellini, Emo, Andrea Corti, Salvatore D'Antone, and Roberto Solaro. "Biodegradation of Poly (Vinyl Alcohol) Based Materials." *Progress in Polymer Science* 28, no. 6 (June 1, 2003): 963–1014. https://doi.org/10.1016/S0079-6700(02)00149-1.
[51] Rolsky and Kelkar, "Degradation of Polyvinyl Alcohol in US Wastewater Treatment Plants and Subsequent Nationwide Emission Estimate." 1.

processors who are part of the EPA Safer Choice Program, have products with the EPA Safer Choice certification, and who are seeking an EPA Safer Choice certification for pods or sheets products, to fund independent, third-party extensive health and environmental safety testing of PVA once it is released into ecosystems by way of WWTPs, to determine potential environmental impact. In addition, given the persistence of PVA in the environment and its potential for bioaccumulation, this petition requests immediate update of the status of PVA from a "green circle" to a "gray square" on the EPA Safer Chemical Ingredients Lists until required testing is conducted. Using the polymer exemption definition, the EPA puts forth, a polymer cannot be exempt if it degrades into PBTs (Persistence, Bioaccumulation, Toxins).[52] Rolsky and Kelkar model that PVA likely persists in our environment and Chiellini et al. have shown the potential for PVA to have bioaccumulation properties.[53] For these reasons, it is requested that PVA undergo the requisite testing to determine its impact on the environment and be updated on the Safer Chemical List until the tests funded and submitted by PVA pods and sheets manufacturers and processors who are part of the EPA Safer Choice Program are complete.

[52] EPA PBT Final Rule [9]
[53] Chiellini et al., "Biodegradation of Poly (Vinyl Alcohol) Based Materials."

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Safer Choice Standard and Criteria

Safer Choice Standard | Ingredient Criteria | Product-Class Criteria

Safer Choice Standard

- **Read the most recent version of the Safer Choice Standard** <https://epa.gov/saferchoice/safer-choice-standard> **(February 2015)**
- Overview of the standard
- Changes to the standard
- Implementation and compliance schedules
- Frequently asked questions (FAQs) about ingredient disclosure, packaging, and performance requirements

Overview

The Safer Choice Standard, formerly known as DfE's Standard for Safer Products (or the "DfE Standard") identifies the requirements products and their ingredients must meet to earn the Safer Choice label.

Read the most recent version of the Safer Choice Standard <https://epa.gov/saferchoice/safer-choice-standard> (February 2015)

Changes to the Safer Choice Standard

The Safer Choice Standard was revised in February 2015. The Safer Choice Standard now includes provisions for the Safer Choice label, an associated fragrance-free label, and changes to the standard to implement the Safer Choice label.

Read the Changes to the Standard to Implement the Safer Choice Label <https://epa.gov/saferchoice/safer-choice-standard-2015-update>.

Read the Notice of Availability and Request for Comments <http://www.regulations.gov/docket/epa-hq-oppt-2015-0047>.

Implementation and compliance schedules

To ensure your products are compliant with the most recent version of the Safer Choice Standard, please read the Safer Choice Implementation and Compliance Schedules <https://epa.gov/saferchoice/safer-choice-implementation-and-compliance-schedules>.

Frequently asked questions (FAQs) about ingredient disclosure, packaging, and performance requirements

- Ingredient disclosure FAQs <https://epa.gov/sites/default/files/2015-02/documents/ingredient_disclosure_guidance.pdf>
- Packaging FAQs <https://epa.gov/sites/default/files/2015-02/documents/packaging_guidance.pdf>
- Product performance FAQs <https://epa.gov/system/files/documents/2022-04/product_performance_guidance.pdf>

Criteria for Safer Chemical Ingredients

Each chemical ingredient in a formulation has a function in making a product work - whether it is to aid in cleaning by reducing surface tension (surfactants), dissolve or suspend materials (solvents), or reduce water hardness (chelating agents). Within these "functional classes," many ingredients share similar toxicological and environmental fate characteristics. As a result, Safer Choice focuses its review of formulation ingredients on the key (environmental and human health) characteristics of concern within a functional class. This approach allows formulators to use those ingredients with the lowest hazard in their functional class, while still formulating high-performing products.

The Safer Choice Program evaluates each ingredient in a formulation against the following Master and Functional-Class Criteria documents, as appropriate. These documents define the characteristics and toxicity thresholds for ingredients that are acceptable in Safer Choice products.

The criteria are based on EPA expertise in evaluating the physical and toxicological properties of chemicals, and while they incorporate authoritative lists of chemicals of concern, they go far beyond these lists. Safer Choice applies the criteria using EPA research and analytical methods to ensure that Safer Choice products contain only the safest possible ingredients. All criteria documents are part of the Safer Choice Standard.

- Master criteria <https://epa.gov/saferchoice/safer-choice-master-criteria-safer-chemical-ingredients>
- Functional-class criteria
    - Chelating and sequestering agents <https://epa.gov/saferchoice/safer-choice-criteria-chelating-and-sequestering-agents>
    - Colorants, polymers, preservatives, and related chemicals <https://epa.gov/saferchoice/safer-choice-criteria-colorants-polymers-preservatives-and-related-chemicals>
    - Defoamers <https://epa.gov/saferchoice/safer-choice-criteria-defoamers>
    - Enzymes and enzyme stabilizers <https://epa.gov/saferchoice/safer-choice-criteria-enzymes-and-enzyme-stabilizers>
    - Fragrances <https://epa.gov/saferchoice/safer-choice-criteria-fragrances>
    - Oxidants and oxidant stabilizers <https://epa.gov/saferchoice/safer-choice-criteria-oxidants-and-oxidant-stabilizers>
    - Processing aids and additives <https://epa.gov/saferchoice/safer-choice-criteria-processing-aids-and-additives>
    - Solvents <https://epa.gov/saferchoice/safer-choice-criteria-solvents>
    - Surfactants <https://epa.gov/saferchoice/safer-choice-criteria-surfactants>

Safer Choice Product-Class Criteria

In addition to the product and ingredient criteria in the Safer Choice Standard, supplemental requirements are necessary to ensure that certain classes of products achieve best-in-class status and qualify to carry the Safer Choice label. These supplemental requirements are set forth in the criteria documents below.

- Direct release products
- Fragrance-free products
- Ice-melt products
- Inorganic- and mineral-based products
- Microorganism-based products
- Personal care products
- Safer marine lubricants
- Specialized industrial products

Criteria for environmental toxicity and fate for chemicals in direct release products

Certain products intended for use outdoors are likely to bypass sewage treatment, limiting the time for degradation prior to entering sensitive environments. For these products, like boat cleaners and graffiti removers, Safer Choice has raised the bar in its standard environmental criteria to address the potential for immediate contact with aquatic life. **Any ingredients (including surfactants, preservatives, solvents, etc.) that have aquatic toxicity values <10 mg/L are not allowed in Safer Choice direct release products.**

Supplemental criteria for chemicals in direct release products

Acute Aquatic Toxicity Value (L/E/IC50)	Chronic Aquatic Toxicity Value (LOEC)	Persistence[1] (measured in terms of rate of biodegradation)	Bioaccumulation Potential	Status
If acute aquatic	OR chronic			Not

toxicity ≤10 ppm...	toxicity ≤1 ppm...	⇒	⇒	acceptable
Acute Aquatic Toxicity Value (L/E/IC50)	**Chronic Aquatic Toxicity Value (LOEC)**	**Persistence[1] (measured in terms of rate of biodegradation)** AND	**Bioaccumulation Potential**	**Status**
If acute aquatic toxicity >10 ppm and <100 ppm...	AND chronic aquatic toxicity >1 ppm...	biodegradation[2] occurs within a 10-day window without degradation products of concern[3]...	...AND BCF/BAF <1,000[4]...	Acceptable
		...AND biodegradation[2] does not occur within a 10-day window and/or results in degradation products of concern[3]...	⇒	Not acceptable

		...AND biodegradation[2]		

Acute Aquatic Toxicity Value (L/E/IC50)	**Chronic Aquatic Toxicity Value (LOEC)**	**Persistence (measured in terms of rate of biodegradation)**	**Bioaccumulation Potential**	**Status**
If acute aquatic toxicity ≥100 ppm...	AND chronic aquatic toxicity ≥10 ppm...	occurs within 28 days without ... AND products of concern[3]...	...AND BCF/BAF <1,000[4]...	Acceptable
toxicity ≥100 ppm...	...AND biodegradation[2] does not occur within 28 days and/or results in degradation products of concern[3]...	⇒		Not acceptable

1. Insoluble, inert, metal-containing, or inorganic compounds may be inherently persistent and are therefore considered recalcitrant, meaning resistant to degradation or elemental. For direct release applications, recalcitrant chemicals may be acceptable if they are measured or predicted to have low aquatic toxicity; both acute (≥100 ppm) and chronic (≥10 ppm) values will be considered.
2. Generally, >60% mineralization (to CO2 and water) in a Ready Biodegradation test.
3. Products of concern are compounds with high acute or chronic aquatic toxicity (L/E/IC50 ≤ 10ppm or LOEC ≤1 ppm) and a slow rate of biodegradation (greater than 28 days).
4. Category for Persistent, Bioaccumulative and Toxic New Chemical Substance. November 4, 1999. Federal Register Notice, volume 64, issue 213.

Criteria for fragrance-free products

From Safer Choice Standard Section 3.9 (pg. 11) <https://epa.gov/saferchoice/safer-choice-standard>: "For products that qualify for the Safer Choice label, manufacturers may request an additional certification—the Fragrance-free label—to indicate that a product contains no fragrance materials. To qualify as fragrance-free, a product must only contain ingredients on or eligible for the Agency's Safer Chemical Ingredients List (SCIL) and **must not** contain any fragrance materials. Chemicals with dual functionality, i.e., that function both as a fragrance and something else, are not allowed in fragrance-free products."

Please read "Safer Choice Label – Fragrance-Free" for further details <https://epa.gov/saferchoice/safer-choice-criteria-fragrance-free-products>.

Criteria for ice-melt products

An ice-melt product under Safer Choice is, as the name implies, one that melts ice and snow at temperatures below the freezing point of water, and not simply a product that aids traction like sand. A manufacturer of a safer ice-melt product may become a Safer Choice partner provided that they agree to certain terms in their partnership agreement and that their product has the characteristics specified below. Safer Choice ice-melt products must:

1. Pass the appropriate Safer Choice Criteria.
2. Reduce sodium (Na) and chloride (Cl) use by at least 30% (under comparable use scenarios).
3. Be labeled under a Safer Choice partnership agreement in which the product manufacturer has agreed to a customer education/training plan to ensure proper product use and application rates (and reductions in Na and Cl).
4. Not contain cyanide as an anti-caking agent.
5. Function at temperatures <0 °F.
6. Comply with Pacific NW Snow Fighters' criteria <http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_577.pdf> (pdf) for reduction in corrosivity to steel (to be acceptable, a corrosion-inhibition chemical product must prove to have a percent effectiveness value of at least 70% less than Sodium Chloride).
7. Meet performance levels as evaluated under the Pacific NW Snow Fighters' criteria <http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_577.pdf> (pdf).

Criteria for inorganic- and mineral-based products

To label innovative, safer products, the Safer Choice review focuses on the evaluation of wet-chemical ingredients and formulations. Safer Choice assesses ingredients based on its safer chemical criteria and in comparison to other products/ingredients for similar uses. The Safer Choice Criteria inform on what chemistry is safer by comparing

substances, within functional use classes (surfactants, solvents, etc.), against an array of toxicological endpoints. Safer Choice allows the use of its label on those products whose ingredients derive entirely from the safer end of the human health and environmental spectrum.

The standard Safer Choice review is not oriented to evaluating a product composed solely of inorganic materials or minerals, which are typically inert and function via friction rather than chemical activity. Safer Choice recognizes, however, that these products may substitute for chemical-based products that contain ingredients of potential concern and may generate significant direct and collateral human health and environmental benefits. Safer Choice has therefore developed evaluation criteria that may make it possible to label these products (e.g., cleaners made of crushed glass or stones; **not**, however, sodium-chloride-based or similar ice-melt products for which Safer Choice has separate criteria).

A decision to allow use of the Safer Choice label will be based on the following criteria (in addition to the other applicable elements in the Safer Choice Standard):

1. **Hazard profile.**
    - The hazard profile of the inorganic or mineral materials: Ingredients must not raise any toxicological concerns. Consider, for example, if the material is asbestiform or fibrous, or if potential impurities are present (e.g., problematic metals or crystalline silica).
    - The hazard profile of the non-mineral-based ingredients: Ingredients must pass the appropriate Criteria for Safer Chemical Ingredients.
2. **Recycled content.** Product must be composed of at least 95% recycled materials. If the product includes a plastic handle or other plastic part, it must also be reusable and/or composed of at least 95% recycled content.
3. **Manufacturing/sustainability.** Candidate partner must provide information and/or data to demonstrate that only permissible air, land or water releases occur during the product's manufacturing process (e.g., via environmental release permits or waste manifests). They must also report on energy and water use as indicia of resource conservation and a baseline for continuous improvement.
4. **Safer substitution.** Product must have the potential to meet the same functional need as chemical-based products currently in use.

5. **Exposure and release.** Product in use must not generate particles that are inhalable (10 microns or less). - Product must not produce potential waste products of concern (candidate must submit an analysis of the byproducts generated).
6. **Packaging.** Packaging must comply with the Safer Choice Standard, section 4.2.6. Any paperboard in the packaging should be made of or work toward 100% recycled content.
7. **Performance.** Product must perform well in comparison to a leading brand without damaging surfaces.

Criteria for microorganism-based products

Microorganism-based products are a distinct class and subject to tailored evaluation criteria. In its review, Safer Choice carefully considers the identity and potential hazards and risks of the microbial species, as informed by its Checklist for Formulations Containing Microorganisms <https://epa.gov/saferchoice/safer-choice-criteria-formulations-containing-microorganisms>, in combination with other considerations like purity of strain, ingredient functionality and product performance, as described in its Considerations for Microorganism-based Products <https://epa.gov/saferchoice/safer-choice-criteria-formulations-containing-microorganisms>.

Please note: microbial-based products intended for use in indoor environments are not eligible for partnership. Non-microbial ingredients will be reviewed based on their respective component-class criteria.

Criteria for personal care products (PCP)

In April 2011, Safer Choice finalized section 4.5 of the Safer Choice Standard: “Products Designed for Dermal Contact.” With the increased interest in the Safer Choice label from personal care product manufacturers, the question has arisen whether all personal care products should be reviewed under section 4.5.

Safer Choice intended that the heightened requirements in section 4.5, developed in consultation with the Food and Drug Administration, would apply only to certain classes of personal care products:

- those that are “leave-on” in nature and result in prolonged dermal contact, like lotions and deodorants, and
- those that, regardless of length of exposure, are made to come into contact with infants and children, whose bodies are developing and particularly sensitive to certain chemicals.

In both cases, formulators may address the restriction on sensitizers (including ingredients that lack sensitization data) by listing them on the product label or by providing whole product sensitization testing.

The following matrix categorizes personal care products into two groups based on whether section 4.5 applies or does not apply. While Safer Choice has reviewed and labeled rinse-off personal care products, like hand soaps, Safer Choice has yet to label a leave-on product subject to section 4.5.

Section 4.5 applies (leave-on PCP)	**Section 4.5 doesn't apply (rinse-off PCP)**
Aftershave	Body wash
Astringent/toner	Bubble bath and bath salts
Cleaning wipes that don't require rinsing after use	Hair conditioner
Cuticle cream, lotion, and oil	Exfoliant products (if rinsed off)
Deodorant and antiperspirant	Face wash
Hair shine products	Hair dye, color, and bleach
Hair spray	Hair relaxants
Hair styling products (e.g., balm, gel, mousse)	Makeup remover (if rinsed off)

Section 4.5 applies (leave-on PCP)	Section 4.5 doesn't apply (rinse-off PCP)
Leave-on hair conditioner	Moisturizing products (if rinsed off)
Lip products	Nail polish remover
Makeup and bronzers (e.g., foundation, concealer, bronzer, mascara, eyeliner, eye shadow, blush)	Shampoo
Makeup remover (if left on)	Shaving cream, gel, and foam
Massage oil	Soap and cleansers
Nail polish	
Skin care products (e.g., lotion, moisturizer, cream, oil, serum)	
Sunless tanning products	

Criteria for safer marine lubricants

Manufacturers of marine lubricants subject to the Office of Water Vessel General Permit (VGP) requirements for environmentally acceptable lubricants (EALs), who wish to qualify for the Safer Choice label, must comply with the Safer Choice Standard and Criteria, with the limited exceptions and additional requirements specified below.

It is noteworthy that the chemicals in marine lubricants typically include as part of their functionality the ability to resist degradation and be effective over long periods under adverse conditions. These chemicals also can be complex molecules and mixtures and often lack measured toxicity data. To identify the safest available chemicals given their functional characteristics, the toxicity thresholds in the Safer Choice Master Criteria

<https://epa.gov/saferchoice/safer-choice-master-criteria-safer-chemical-ingredients> will be used to evaluate human health endpoints, and the thresholds below will be used for environmental endpoints.

A. **Human and environmental health requirements.** Candidate products for EAL marine lubricant status must meet, at a minimum, the following ingredient data and hazard limit requirements:

a. *For acute mammalian toxicity (section 5.1 of the Master Criteria), neurotoxicity (5.4), repeated dose toxicity (5.5), respiratory sensitization (5.7), and skin sensitization (5.8), the following data requirements apply:*

Data requirements: Screen specified R-Phrases, H-Phrases, and Authoritative Lists for each chemical present in a mixture. Chemicals with new data not yet reviewed by authoritative bodies will be subject to review

b. *For carcinogenicity (section 5.2 of the Master Criteria), genetic toxicity (5.3), and reproductive and developmental toxicity (5.6), the following data requirements apply:*

Data requirements: Screen specified R-Phrases, H-Phrases, and Authoritative Lists. All available data, measured and/or estimated, for the chemical or a suitable analog will be reviewed against the criteria using a weight-of-evidence approach.

c. *Environmental toxicity and fate*

Limitations on persistent, bioaccumulative and toxic chemicals: Acceptable chemicals must not be persistent (half-life >60 days), bioaccumulative (BCF/BAF =1,000), and aquatically toxic* (LC/EC50 <10 mg/L or NOEC/LOEC <1 mg/L).

Limitation on very persistent and very bioaccumulative chemicals: Acceptable chemicals must not be very persistent (half-life >180 days or recalcitrant) and very aquatically toxic* (LC/EC50 <1.0 mg/L or NOEC/LOEC <0.1 mg/L).

Limitation on very persistent and very toxic chemicals: Acceptable chemicals must not be very persistent (half-life >180 days or recalcitrant) and very aquatically toxic* (LC/EC50 <1.0 mg/L or NOEC/LOEC <0.1 mg/L).

Data requirements: Screen specified R-Phrases, H-Phrases, and Authoritative Lists. All available data, measured and/or estimated, for the chemical or a suitable analog will be reviewed against the criteria using a weight-of-evidence approach.

B. **Direct environmental release.** Ingredients in lubricants that are intended for use in applications that result in their immediate discharge to the environment, bypassing sewage treatment systems, must meet the Criteria for Environmental Toxicity and Fate for Chemicals in Direct Release Products, based on the biodegradation testing in OECD 306.

C. **Renewable content[1].** Products must meet the following renewable content requirements:

a. Hydraulic fluid, transmission fluid, gear oil, and grease: at least 65 percent.

b. Two-stroke oil: at least 50 percent.

D. **Performance.** Products must demonstrate acceptable performance. For example, pass the ASTM D 665 test - "Standard Test Method for Rust Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water."

Criteria for specialized industrial products

Specialized Industrial Products (SIPs) are a distinct subgroup of products that meet tailored criteria under the Safer Choice Program. Safer Choice is using the term "specialized" for this subset of I/I products to distinguish them based on performance requirements from other, more common I/I products, like cleaners and detergents, and to indicate that they require certain ingredients with special, high-performance functionalities. Nevertheless, to earn the Safer Choice label, a candidate product and its ingredients must meet the general SIP criteria, in section II, as well as the subclass-specific requirements, in section III.

Read the Criteria for Specialized Industrial Products <https://epa.gov/saferchoice/safer-choice-criteria-specialized-industrial-products>.

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[1] *Renewable content* means the use of farm- or agriculture-based products, like vegetable oils and animal fats.

Safer Choice Home <https://epa.gov/saferchoice>

Learn About Safer Choice <https://epa.gov/saferchoice/learn-about-safer-choice-label>

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Resources for Manufacturers <https://epa.gov/saferchoice/resources-safer-choice-product-manufacturers>

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Search Safer Choice Products <https://epa.gov/saferchoice/products>

For Use in Your Community <https://epa.gov/saferchoice/find-safer-choices-use-your-community>

Steps to Get the Safer Choice Label on Your Product <https://epa.gov/saferchoice/steps-get-safer-choice-label-your-product>

Contact Us <https://epa.gov/saferchoice/forms/contact-safer-choice-program> to ask a question, provide feedback, or report a problem.

LAST UPDATED ON SEPTEMBER 15, 2022

NO FEAR Act Data <https://epa.gov/ocr/whistleblower-protections-epa-and-how-they-relate-non-disclosure-agreements-signed-epa>

Plain Writing <https://epa.gov/web-policies-and-procedures/plain-writing>

Privacy <https://epa.gov/privacy>

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