

TSCA Section 5(a)(3) Determination for Premanufacture Notices (PMNs) P-25-0085-88

Numbers: P-25-0085, P-25-0086, P-25-0087, and P-25-0088

TSCA Section 5(a)(3) Determination: These chemical substances are not likely to present an unreasonable risk (5(a)(3)(C))

Chemical Names:

PMN #: P-25-0085

Generic: arylcarboxylic acid, polymer with alkanol, ester with substituted polyalkylene glycol.

PMN #: P-25-0086

Generic: polymer of arylcarboxylic acid, glycol, polyalkylene glycol ether.

PMN #: P-25-0087

Generic: polymer of arylcarboxylic acid, alkanediol and alcohols, alkoxyated.

PMN #: P-25-0088

Generic: polymer of arylcarboxylic acid, glycols and polyalkylene glycol ether.

Polymer Exemption Flag: The chemicals must be manufactured such that they meet the polymer exemption criteria as described under 40 CFR §723.250(e)(1), in addition to meeting the definition of polymer at 40 CFR §723.250(b).

Conditions of Use (intended, known, or reasonably foreseen)¹:

Intended conditions of use (specific): Manufacture and import and process for use as, and use as, stain and soil release agents for use in laundry detergents, consistent with the manufacturing, processing, use, distribution, and disposal information described in the PMN.

Known conditions of use: Applying such factors as described in footnote 1, EPA evaluated whether there are known conditions of use and identified none.

¹ Under TSCA § 3(4), the term “conditions of use” means “the circumstances, as determined by the Administrator, under which a chemical substance is intended, known, or reasonably foreseen to be manufactured, processed, distributed in commerce, used, or disposed of.” In general, EPA considers the intended conditions of use of a new chemical substance to be those identified in the section 5(a) notification. Known conditions of use include any condition of use of a chemical substance that EPA believes is ongoing in the United States at the time of submission of the notification, as well as activities within the United States that result from manufacture that is exempt from PMN submission requirements. Reasonably foreseen conditions of use are future circumstances, distinct from known or intended conditions of use, under which the chemical substance may be manufactured, processed, distributed, used, or disposed of. EPA expects that the identification of “reasonably foreseen” conditions of use will be made on a fact-specific, case-by-case basis. EPA will apply its professional judgment and experience when considering factors such as evidence of current use of the new chemical substance outside the United States, information about known or intended uses of chemical substances that are structurally analogous to the new chemical substance, and conditions of use identified in an initial PMN submission that the submitter omits in a revised PMN. The sources EPA uses to identify reasonably foreseen conditions of use include searches of internal confidential EPA PMN databases (containing use information on analogue chemicals), other U.S. government public sources, the National Library of Medicine’s Hazardous Substances Data Bank (HSDB), the Chemical Abstract Service STN Platform, REACH Dossiers, technical encyclopedias (e.g., Kirk-Othmer and Ullmann), and Internet searches.

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Reasonably foreseen conditions of use: Applying such factors as described in footnote 1, EPA evaluated whether there are reasonably foreseen conditions of use and identified domestic manufacture based on the existence of numerous chemical manufacturers in the U.S., and use as polyol components in polyester resin synthesis, as surface treatment compounds for textiles, as anti-graying agents in fabric washes, as intermediates, and as finishing oils based on analogues.

Summary: These chemical substances are not likely to present an unreasonable risk of injury to health or the environment, without consideration of costs or other nonrisk factors, including an unreasonable risk to a potentially exposed or susceptible subpopulation identified as relevant by the Administrator under the conditions of use, based on the risk assessment presented below. EPA estimated that these new chemical substances could have limited persistence and low potential for bioaccumulation, such that repeated exposures are not expected to cause food-chain effects via accumulation in exposed organisms. Based on comparison to structurally analogous chemical substances and data on potential hydrolysis products, EPA estimates that the chemical substances have low environmental hazard and low human health hazard. EPA concludes that the new chemical substances are not likely to present an unreasonable risk under the conditions of use.

Fate: Environmental fate is the determination of which environmental compartment(s) a chemical moves to, the expected residence time in the environmental compartment(s) and removal and degradation processes. Environmental fate is an important factor in determining exposure and thus in determining whether a chemical may present an unreasonable risk. EPA estimated physical/chemical and fate properties of these new chemical substances using data for analogue(s) (biodegradable polymers; [claimed CBI]). In wastewater treatment, these new chemical substances are expected to be removed with an efficiency of 90% due to sorption and biodegradation. Removal of the new chemical substances by biodegradation is high. Sorption of the new chemical substances to sludge is expected to be strong and to soil and sediment is expected to be very strong. Migration of the new chemical substances to groundwater is expected to be negligible due to very strong sorption to soil and sediment. Due to low estimated vapor pressure and Henry's law constant, the new chemical substances are expected to undergo negligible volatilization to air in wastewater treatment. Overall, these estimates indicate that these new chemical substances have low potential to volatilize to air in wastewater treatment or migrate to groundwater.

Persistence²: Persistence is relevant to whether a new chemical substance is likely to present an unreasonable risk because chemicals that are not degraded in the environment at rates that prevent substantial buildup in the environment, and thus increase potential for exposure, may present a risk if the substance presents a hazard to human health or the environment. EPA estimated degradation half-lives of these new chemical substances using data for analogue(s)

² Persistence: A chemical substance is considered to have limited persistence if it has a half-life in water, soil or sediment of less than 2 months or if there are equivalent or analogous data. A chemical substance is considered to be persistent if it has a half-life in water, soil or sediments of greater than 2 months but less than or equal to 6 months or if there are equivalent or analogous data. A chemical substance is considered to be very persistent if it has a half-life in water, soil or sediments of greater than 6 months or if there are equivalent or analogous data. (64 FR 60194; November 4, 1999)

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(biodegradable polymers; [claimed CBI]). EPA estimated that these new chemical substances' aerobic and anaerobic biodegradation half-lives are < 2 months. These estimates indicate that these new chemical substances may have limited persistence in aerobic environments (e.g., surface water) and anaerobic environments (e.g., sediment).

Bioaccumulation³: Bioaccumulation is relevant to whether a new chemical substance is likely to present an unreasonable risk because substances that bioaccumulate in aquatic and/or terrestrial species pose the potential for elevated exposures to humans and other organisms via food chains. EPA estimated the potential for the new chemical substances to bioaccumulate using data for analogue(s) (biodegradable polymers; [claimed CBI]). EPA estimated that the new chemical substances have low bioaccumulation potential based on expected metabolism. EPA estimated that these new chemical substances could have limited persistence and low potential for bioaccumulation, such that repeated exposures are not expected to cause food-chain effects via accumulation in exposed organisms.⁴

Human Health Hazard⁵: Human health hazard is relevant to whether a new chemical substance is likely to present an unreasonable risk because the significance of the risk is dependent upon both the hazard (or toxicity) of the chemical substance and the extent of exposure to the substance. EPA estimated the human health hazard of these chemical substances based on their estimated physical/chemical properties and by comparing them to structurally analogous chemical substances for which there is information on human health hazard. Absorption of the new chemical substances as the parent polymers with MW > 1000 Da is predicted to be nil to poor through the skin when neat, poor through the skin when in solution, and nil through the

³ Bioaccumulation: A chemical substance is considered to have a low potential for bioaccumulation if there are bioconcentration factors (BCF) or bioaccumulation factors (BAF) of less than 1,000 or if there are equivalent or analogous data. A chemical substance is considered to be bioaccumulative if there are BCFs or BAFs of 1,000 or greater and less 5,000 or there are equivalent or analogous data. A chemical substance is considered to be very bioaccumulative if there are BCFs or BAFs of 5,000 or greater or if there are equivalent or analogous data. (64 FR 60194; November 4 1999)

⁴ Arnot JA, Gobas FAPC. 2003. A generic QSAR for assessing the bioaccumulation potential of organic chemicals in aquatic food webs. *QSAR and Combinatorial Science* 22: 337-345.

⁵ A chemical substance is considered to have low human health hazard if effects are observed in animal studies with a No Observed Adverse Effect Level (NOAEL) equal to or greater than 1,000 mg/kg/day or if there are equivalent data on analogous chemical substances; a chemical substance is considered to have moderate human health hazard if effects are observed in animal studies with a NOAEL less than 1,000 mg/kg/day or if there are equivalent data on analogous chemical substances; a chemical substance is considered to have high human health hazard if there is evidence of adverse effects in humans or conclusive evidence of severe effects in animal studies with a NOAEL of less than or equal to 10 mg/kg/day or if there are equivalent data on analogous chemical substances. EPA may also use Benchmark Dose Levels (BMDL) derived from benchmark dose (BMD) modeling as points of departure for toxic effects. See <https://www.epa.gov/bmds/what-benchmark-dose-software-bmds>. Using this approach, a BMDL is associated with a benchmark response, for example a 5 or 10 % incidence of effect. The aforementioned characterizations of hazard (low, medium, high) would also apply to BMDLs. In the absence of animal data on a chemical or analogous chemical substance, EPA may use other data or information such as from in vitro assays, chemical categories (e.g., Organization for Economic Co-operation and Development, 2014 Guidance on Grouping of Chemicals, Second Edition. ENV/JM/MONO(2014)4. Series on Testing & Assessment No. 194. Environment Directorate, Organization for Economic Co-operation and Development, Paris, France. ([http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=env/jm/mono\(2014\)4&doclanguage=en](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=env/jm/mono(2014)4&doclanguage=en))), structure-activity relationships, and/or structural alerts to support characterizing human health hazards.

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lungs and gastrointestinal (GI) tract based on physical/chemical properties. Absorption of the low molecular weight (LMW) fractions < 1000 Da ([claimed CBI]%) for the P-25-0085, -0086, and -0088 substances is predicted to be nil to poor through the skin when neat, poor through the skin when in solution, poor through the lungs, and moderate through the GI tract based on physical/chemical properties. Absorption of the LMW fraction < 1000 Da ([claimed CBI]%) for P-25-0087 substance is predicted to be nil to poor through the skin when neat, poor through the skin when in solution, and nil through the lungs and GI tract based on physical/chemical properties. Absorption of the LMW fractions < 500 Da ([claimed CBI]%) for the P-25-0086 and -0088 substances is predicted to be nil to poor through the skin when neat, poor to moderate through the skin when in solution, poor through the lungs, and good through the GI tract based on physical/chemical properties. For the P-25-0085 substance, [claimed CBI] so an absorption prediction was not determined. No health hazards were identified for the new chemical substances when manufactured as described in the PMNs and to meet the polymer exemption criteria described under 40 CFR §723.250(e)(1). No test data were available for the new chemical substances.

Environmental Hazard⁶: Environmental hazard is relevant to whether a new chemical substance is likely to present unreasonable risk because the significance of the risk is dependent upon both the hazard (or toxicity) of the chemical substance and the extent of exposure to the substance. EPA estimated environmental hazard for these new chemical substances based on SAR predictions for Nonionic Polymers (special class within ECOSAR V.2.2). Acute toxicity values estimated for fish, aquatic invertebrates, and algae are all >100 mg/L, respectively. Chronic toxicity values estimated for fish, aquatic invertebrates, and algae are all >10 mg/L, respectively. These new chemical substances are expected to have low environmental hazard. Application of assessment factors of 5 and 10 to acute and chronic toxicity values, respectively, results in acute and chronic concentrations of concern of >20 mg/L (>20,000 ppb) and >1 mg/L (>1,000 ppb), respectively.

Exposure: The exposure to a new chemical substance is potentially relevant to whether a new chemical substance is likely to present unreasonable risks because the significance of the risk is dependent upon both the hazard (or toxicity) of the chemical substance and the extent of exposure to the substance.

EPA considers workers to be a potentially exposed or susceptible subpopulation (PESS) on the basis of greater exposure potential compared to the general population. EPA also considers PESS in conducting general population drinking water exposures by evaluating risks associated with water intake rates for multiple age groups, ranging from infants to adults. EPA considers

⁶ A chemical substance is considered to have low ecotoxicity hazard if the Fish, Daphnid and Algae LC50 values are greater than 100 mg/L, or if the Fish and Daphnid chronic values (ChVs) are greater than 10.0 mg/L, or there are not effects at saturation (occurs when water solubility of a chemical substance is lower than an effect concentration), or the log Kow value exceeds QSAR cut-offs. A chemical substance is considered to have moderate ecotoxicity hazard if the lowest of the Fish, Daphnid or Algae LC50s is greater than 1 mg/L and less than 100 mg/L, or where the Fish or Daphnid ChVs are greater than 0.1 mg/L and less than 10.0 mg/L. A chemical substance is considered to have high ecotoxicity hazard, or if either the Fish, Daphnid or Algae LC50s are less than 1 mg/L, or any Fish or Daphnid ChVs is less than 0.1 mg/L (Sustainable Futures <https://www.epa.gov/sustainable-futures/sustainable-futures-p2-framework-manual>).

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consumers of specific products to be a potentially exposed or susceptible subpopulation on the basis of greater exposure potential compared to the general population who do not use specific products.

Risk Characterization: Due to low hazard, EPA believes that these chemical substances would be not likely to present an unreasonable risk even if potential exposures were high. Therefore, EPA concludes that the new chemical substances are not likely to present unreasonable risk under the conditions of use.

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Date: _____

/s/

Shari Z. Barash, Director
New Chemicals Division
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency