

## SCREENING-LEVEL HAZARD CHARACTERIZATION

### Phenethyl Alcohol (CASRN 60-12-8)

The High Production Volume (HPV) Challenge Program<sup>1</sup> was conceived as a voluntary initiative aimed at developing and making publicly available screening-level health and environmental effects information on chemicals manufactured in or imported into the United States in quantities greater than one million pounds per year. In the Challenge Program, producers and importers of HPV chemicals voluntarily sponsored chemicals; sponsorship entailed the identification and initial assessment of the adequacy of existing toxicity data/information, conducting new testing if adequate data did not exist, and making both new and existing data and information available to the public. Each complete data submission contains data on 18 internationally agreed to “SIDS” (Screening Information Data Set<sup>1,2</sup>) endpoints that are screening-level indicators of potential hazards (toxicity) for humans or the environment.

The Environmental Protection Agency’s Office of Pollution Prevention and Toxics (OPPT) is evaluating the data submitted in the HPV Challenge Program on approximately 1400 sponsored chemicals by developing hazard characterizations (HCs). These HCs consist of an evaluation of the quality and completeness of the data set provided in the Challenge Program submissions. They are not intended to be definitive statements regarding the possibility of unreasonable risk of injury to health or the environment.

The evaluation is performed according to established EPA guidance<sup>2,3</sup> and is based primarily on hazard data provided by sponsors; however, in preparing the hazard characterization, EPA considered its own comments and public comments on the original submission as well as the sponsor’s responses to comments and revisions made to the submission. In order to determine whether any new hazard information was developed since the time of the HPV submission, a search of the following databases was made from one year prior to the date of the HPV Challenge submission to the present: (ChemID to locate available data sources including Medline/PubMed, Toxline, HSDB, IRIS, NTP, ATSDR, IARC, EXTOXNET, EPA SRS, etc.), STN/CAS online databases (Registry file for locators, ChemAbs for toxicology data, RTECS, Merck, etc.) and Science Direct. OPPT’s focus on these specific sources is based on their being of high quality, highly relevant to hazard characterization, and publicly available.

OPPT does not develop HCs for those HPV chemicals which have already been assessed internationally through the HPV program of the Organization for Economic Cooperation and Development (OECD) and for which Screening Initial Data Set (SIDS) Initial Assessment Reports (SIAR) and SIDS Initial Assessment Profiles (SIAP) are available. These documents are presented in an international forum that involves review and endorsement by governmental authorities around the world. OPPT is an active participant in these meetings and accepts these documents as reliable screening-level hazard assessments.

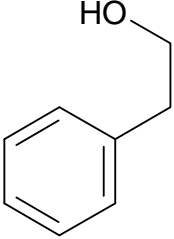
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<sup>1</sup> U.S. EPA. High Production Volume (HPV) Challenge Program; <http://www.epa.gov/chemrtk/index.htm>.

<sup>2</sup> U.S. EPA. HPV Challenge Program – Information Sources; <http://www.epa.gov/chemrtk/pubs/general/guidocs.htm>.

<sup>3</sup> U.S. EPA. Risk Assessment Guidelines; <http://cfpub.epa.gov/ncea/raf/rafguid.cfm>.

These hazard characterizations are technical documents intended to inform subsequent decisions and actions by OPPT. Accordingly, the documents are not written with the goal of informing the general public. However, they do provide a vehicle for public access to a concise assessment of the raw technical data on HPV chemicals and provide information previously not readily available to the public.

|   |  |
|---|--|
| <p><b>Chemical Abstract Service Registry Number (CASRN)</b></p>   | <p><b>60-12-8</b></p>  |
| <p><b>Chemical Abstract Index Name</b></p>  | <p><b>Benzeneethanol</b></p>   |
| <p><b>Structural Formula</b></p>  |  |
| <p style="text-align: center;"><b>Summary</b></p> <p>CASRN 60-12-8 is a colorless liquid with high water solubility and moderate vapor pressure. The chemical is expected to have high mobility in soil. Volatilization is considered moderate based on the Henry's Law constant. The rate of hydrolysis is considered negligible. The rate of atmospheric photooxidation is moderate. CASRN 60-12-8 is expected to have low persistence (P1) and low bioaccumulation potential (B1).</p> <p>The acute toxicity of CASRN 60-12-8 is low in rats by the oral, inhalation and dermal routes and is moderate in rabbits by the dermal route. A 90-day dermal repeated-dose toxicity study in rats showed decreases in body weights and body weight gains in males and females at the two highest doses and blood effects in males at 2040 mg/kg-day (highest dose tested); the NOAEL for systemic toxicity is 510 mg/kg-day. No reproductive toxicity studies are available; however, in the 90-day repeated-dose toxicity study, increases in gonadal weights were observed at 2040 mg/kg-day. In a prenatal developmental toxicity study in rats administered CASRN 60-12-8 via the diet, no effects on maternal or developmental parameters were observed; the NOAEL for maternal and developmental toxicity is 799 mg/kg-day (highest dose tested). In a prenatal developmental toxicity study in rats administered CASRN 60-12-8 via gavage, severe intoxication was reported in the dams at 432 mg/kg-day; the NOAEL for maternal toxicity is 43.2 mg/kg-day. Increases in the numbers of fetuses with developmental abnormalities were observed at 4.3 mg/kg-day (the lowest dose tested; NOAEL could not be established). In a prenatal developmental toxicity study in rats administered CASRN 60-12-8 via the dermal route, increases in mortality and decreases in body weight gains were observed in the dams at 1430 mg/kg-day; the NOAEL for maternal toxicity is 438 mg/kg-day. An increase in fetuses with skeletal anomalies was seen at 438 mg/kg-day; the NOAEL for developmental toxicity is 143 mg/kg-day. CASRN 60-12-8 did not induce sister chromatid exchanges <i>in vitro</i>.</p> <p>For CASRN 60-12-8, the 96-hour LC<sub>50</sub> for fish is 215 mg/L (nominal). The 48-hour EC<sub>50</sub> for aquatic invertebrate is 287 mg/L (nominal). The 72-hour EC<sub>50</sub> for aquatic plants is 490 mg/L (nominal).</p> <p>Gene mutations and chromosomal aberrations are identified as data gaps under the HPV</p> |  |

Challenge Program.

The sponsor, the Flavor and Fragrance High Production Volume Consortia (FFHPVC) Aromatic Consortium, submitted a Test Plan and Robust Summaries to EPA for phenethyl alcohol (CASRN 60-12-8; CA name: benzeneethanol) on August 1, 2002. EPA posted the submission on the ChemRTK HPV Challenge website on August 22, 2002 (<http://www.epa.gov/chemrtk/pubs/summaries/phnethal/c13895tc.htm>). EPA comments on the original submission were posted to the website on January 15, 2003. Public comments were also received and posted to the website. The sponsor submitted updated/revised documents on January 13, 2005, which were posted to the ChemRTK website on February 3, 2005.

### **Submission of Supporting Chemicals**

In the original robust summaries, the sponsor submitted data for CASRN 93-53-8 (2-methyl phenylacetaldehyde), CASRN 103-82-2 (phenylacetic acid) and CASRN 120-24-1 (isoeugenol phenylacetate). In the revised robust summaries, the sponsor also submitted data for CASRN 102-20-5 (phenethyl phenylacetate) and CASRN 1123-85-9 (2-methyl phenethyl alcohol).

EPA stated, in their comments from January 16, 2003, that CASRN 120-24-1 is not an appropriate surrogate because the chemical structure is too different from the sponsored substance. Also, although EPA agreed that CASRN 60-12-8 (the sponsored substance) will be at least partly metabolized to CASRN 103-82-2, the data in the original test plan did not provide definitive conclusions about this metabolism pathway; the revised test plan also contain data that do not support a conclusion of rapid or complete metabolism to the acid.

EPA has concluded that the other chemicals have structures that may lead to differences in toxicity from the sponsored substance. First, there is 1 carbon separating the benzyl group from carbonyl group for CASRN 102-20-5 vs. 2 carbons between the benzyl and hydroxyl groups for CASRN 60-12-8. Next, CASRN 93-53-8 and 1123-85-9 contain methyl groups at the 2-carbon position whereas CASRN 60-12-8 does not have branching in the alkyl chain. Therefore, these CASRNs are not being used as supporting chemicals for CASRN 60-12-8.

## **1. Chemical Identity**

### **1.1. Identification and Purity**

The following description is taken from the 2005 Test Plan and Robust Summary. Phenethyl alcohol is a simple aromatic primary alcohol. Test substance purity, when noted in the Robust Summaries, was given as  $\geq 95\%$ .

## 1.2. Physical-Chemical Properties

The physical-chemical properties of CASRN 60-12-8 are summarized in Table 1. This chemical is a liquid with high water solubility and moderate vapor pressure.

| Property                                 | Value  |
|--|--|
| CASRN                                    | 60-12-8  |
| Molecular Weight                         | 122.2  |
| Physical State                           | Colorless liquid   |
| Melting Point                            | -27°C (measured)   |
| Boiling Point                            | 218.2°C (measured)   |
| Vapor Pressure                           | 0.0868 mm Hg at 25°C (measured)<br>0.0707 mm Hg at 30°C (measured)     |
| Water Solubility                         | 22,200 mg/L at 25°C (measured)   |
| Dissociation Constant (pK <sub>a</sub> ) | Not applicable   |
| Henry's Law Constant                     | $2.56 \times 10^{-7}$ atm·m <sup>3</sup> /mole (measured) <sup>2</sup> |
| Log K <sub>ow</sub>                      | 1.36 (measured)  |

<sup>1</sup> Flavor and Fragrance High Production Volume Consortia. The Aromatic Consortium. February 3, 2005. Final Revised Test Plan and Robust Summary for Phenethyl Alcohol. Available from: <http://www.epa.gov/chemrtk/pubs/summaries/phnethal/c13895tc.htm> as of January 14, 2004.

<sup>2</sup> SRC. 2009. The Physical Properties Database (PHYSPROP). SRC: Syracuse, NY. Available from: <http://www.srcinc.com/what-we-do/free-demos.aspx> as of December 19, 2009.

## 2. General Information on Exposure

### 2.1. Production Volume and Use Pattern

According to the 2006 IUR submissions, CASRN 60-12-8 had aggregated production and/or import volume(s) in the United States between 1 million and 10 million pounds.

Non-confidential industrial processing and uses reported in the 2006 IUR submissions for this chemical include chemical product and preparation manufacturing, other basic organic chemical manufacturing, and soap and cleaning compound manufacturing. Non-confidential commercial and consumer uses include paper products, polishes and sanitation goods, soaps and detergents and other uses.

### 2.2. Environmental Exposure and Fate

Table 2 lists the environmental fate properties of CASRN 60-12-8. This chemical is expected to have high mobility in soil. It was readily biodegradable using a modified MITI test (OECD 301C) and was also readily biodegradable using a modified Sturm test (OECD 301B).

Volatilization is considered moderate based on the Henry's Law constant. The rate of hydrolysis

is considered negligible. The rate of atmospheric photooxidation is moderate. CASRN 60-12-8 is expected to have low persistence (P1) and low bioaccumulation potential (B1).

| Property                                   | Value   |
|--|---|
| Photodegradation Half-life                 | 12.6 hours (estimated)  |
| Hydrolysis Half-life                       | Stable under environmental conditions   |
| Biodegradation                             | 100% in 28 days (readily biodegradable);<br>87% in 14 days (readily biodegradable) <sup>2</sup> |
| Bioaccumulation Factor                     | BAF = 2 (estimated) <sup>3</sup>  |
| Log K <sub>oc</sub>                        | 1.6 (estimated) <sup>3</sup>  |
| Fugacity<br>(Level III Model) <sup>3</sup> |   |
| Air (%)                                    | 1.5   |
| Water (%)                                  | 29.1  |
| Soil (%)                                   | 69.3  |
| Sediment (%)                               | 0.1   |
| Persistence <sup>4</sup>                   | P1 (low)  |
| Bioaccumulation <sup>4</sup>               | B1 (low)  |

<sup>1</sup> Flavor and Fragrance High Production Volume Consortia. The Aromatic Consortium. February 3, 2005. Final Revised Test Plan and Robust Summary for Phenethyl Alcohol. January 14, 2004. Available from:

<http://www.epa.gov/chemrtk/pubs/summaries/phnethal/c13895tc.htm> as of January 14, 2004.

<sup>2</sup> National Institute of Technology and Evaluation. 2002. Biodegradation and Bioaccumulation of the Existing Chemical Substances under the Chemical Substances Control Law. Available from: [http://www.safe.nite.go.jp/english/kizon/KIZON\\_start\\_hazkizon.html](http://www.safe.nite.go.jp/english/kizon/KIZON_start_hazkizon.html) as of January 14, 2004.

<sup>3</sup> U.S. EPA. 2009. Estimation Programs Interface Suite™ for Microsoft® Windows, v4.00. U.S. Environmental Protection Agency, Washington, DC, USA. Available from: <http://www.epa.gov/opptintr/exposure/pubs/episuitedi.htm> as of January 14, 2004.

<sup>4</sup> Federal Register. 1999. Category for Persistent, Bioaccumulative, and Toxic New Chemical Substances. *Federal Register* 64, Number 213 (November 4, 1999) pp. 60194–60204.

### **3. Human Health Hazard**

The human health data are summarized in Table 3.

#### ***Acute Oral Toxicity***

(1) Sprague-Dawley rats (5/sex/dose) were administered the chemical via gavage at 1000, 1600, 2000, 2500 or 3200 mg/kg-bw in 0.25% methylcellulose and observed for 14 days. Mortality occurred at 1600 mg/kg-bw and higher.

**LD<sub>50</sub> = 1609 mg/kg**

(2) Male Carworth-Wistar rats (5/dose) were administered the test substance via gavage at unspecified concentrations and observed for 14 days. Mortality data were not reported.

**LD<sub>50</sub> = 2509 mg/kg**

(3) Male and female Osborne-Mendel rats (number not specified) were administered the chemical via gavage at unspecified concentrations and observed for 2 weeks. Deaths occurred from 4 to 18 hours.

**LD<sub>50</sub> = 1790 mg/kg**

(4) Male Wistar rats (10/dose) were administered the test substance via gavage at 760, 1200, 1900 or 5000 mg/kg-bw and observed for 14 days. Mortality occurred at all doses. No data on clinical signs were reported.

**LD<sub>50</sub> = 1500 mg/kg**

#### ***Acute Inhalation Toxicity***

Sprague-Dawley rats (5/sex/group) were exposed to the test substance as an aerosol at 4.63 mg/L for 4 hours and were observed for 14 days. There were no deaths reported.

**LC<sub>50</sub> > 4.63 mg/L**

#### ***Acute Dermal Toxicity***

(1) Male albino New Zealand rabbits (4/group) were administered the test substance via the dermal route at unspecified doses to intact skin for 24 h with occlusion and were observed for 14 days. Mortality results were not reported.

**LD<sub>50</sub> = 805 mg/kg**

(2) Male albino rats (10) were administered the test substance via the dermal route at 5000 mg/kg under unspecified conditions. There were no deaths.

**LD<sub>50</sub> > 5000 mg/kg**

(3) New Zealand White rabbits (4 rabbits/sex/dose) were administered the test substance via the dermal route at 1600, 2500 or 4000 mg/kg to abraded and intact skin for 24 hours under unspecified conditions and were observed for 14 days. Mortality occurred at all dose levels.

**LD<sub>50</sub> = 2535 mg/kg**

#### ***Repeated-Dose Toxicity***

Charles River CD rats (5/sex/dose) were administered the test substance via the dermal route at 0.25, 0.5, 1 or 2 mL/kg-day (approximately 0, 255, 510, 1020 or 2040 mg/kg-day) to intact skin under unspecified conditions for 90 days (Owston et al., 1981). Ophthalmological, hematological, clinical chemistry and urinalysis examinations were performed. Necropsy examinations were performed and brain, kidney, liver and gonads were weighed.

Histopathological examinations were conducted on a range of tissues (adrenals, brain, heart, kidneys, liver, spleen, lung, gonads, urinary bladder and nervous system) from the control and high-dose groups. There were no deaths or clinical signs. Significant decreases in body weights and body weight gains were seen in males and females at the two highest test doses ( $p < 0.05$ ) and were not accompanied by changes in food consumption. High-dose males exhibited significant decreases in hemoglobin concentration and white blood cell counts. Both sexes had

significant ( $p < 0.05$ ) increases in relative brain, kidney and gonad weights at the high-dose. Absolute and relative liver weights were decreased in males at 1 mL/kg-day, but not at the highest dose. Relative liver weights were increased in females at all doses; however, no histopathological effects were observed. Histopathological examination of other organs revealed no evidence of tissue alterations that could be related to phenethyl alcohol administration.

**LOAEL ~ 1020 mg/kg-day** (based on decreased body weight and body weight gain in males and females)

**NOAEL ~ 510 mg/kg-day**

### ***Reproductive Toxicity***

No specific reproductive toxicity studies are available. In the 90-day dermal study in rats described previously, increases in relative gonad weights were reported at the highest dose (2040 mg/kg-day) but not at 1020 mg/kg-day or lower doses. Histopathological examination revealed no evidence of tissue alterations in testes, epididymides or ovaries.

### ***Developmental Toxicity***

(1) Pregnant CrL:COBS CD (SD) BR rats (group size not specified) were administered the test substance via the diet at 83, 266 or 799 mg/kg-bw/day on days 6 through 16 of gestation. Doses were microencapsulated in gum Arabic to increase food palatability. Maternal and developmental parameters evaluated were not specified although the method was noted as being similar to OECD TG 414. There were reportedly no effects in dams or fetuses at any dose.

**NOAEL (maternal toxicity) = 799 mg/kg-bw/day** (highest concentration tested)

**NOAEL (developmental toxicity) = 799 mg/kg-bw/day** (highest concentration tested)

(2) Pregnant Long-Evans rats (19 controls, 7 at the mid and low doses and 5 at the high dose) were administered the test substance via gavage in distilled water at 0, 4.3, 43 or 432 mg/kg-day on days 6 through 15 of gestation (Mankes et al., 1983). Dams were euthanized on day 20 and fetuses delivered by Caesarean section. Dams at the highest dose showed severe intoxication (no other details given) with no effects at other doses. Mean litter size was 13 at the highest dose, 9 at the low- and mid-doses and 12 in controls. At 432 mg/kg-day, all offspring exhibited anomalies (affecting eyes, limbs, kidneys [hydronephrosis], neural tubes, and/or digits). At 43 mg/kg-day, 93% of all offspring (100% of litters) had abnormalities (eyes and/or limbs). At 4.3 mg/kg-day, 50% of offspring (100% of litters) had abnormalities (eyes, kidneys [hydronephrosis]). These percentages are statistically significantly higher than in controls ( $p \leq 0.05$ ), which showed 4% of offspring with abnormalities (% of litters not stated). The authors stated effects were evaluated using both fetuses and litters as experimental units, but statistics on abnormalities were presented only for total fetuses affected. Decreases in pup weight and pup size at birth, and increases in skeletal variations were also observed; however, there was no clear dose-response relationship for these effects.

**LOAEL (maternal toxicity) = 432 mg/kg-day** (based on severe intoxication)

**NOAEL (maternal toxicity) = 43 mg/kg-day**

**LOAEL (developmental toxicity) = 4.3 mg/kg-day** (based on increased numbers of fetuses with skeletal, eye and kidney abnormalities)

**NOAEL (developmental toxicity) = Not established**

(3) Pregnant CrL:COBS CD (SD) BR rats (group size not specified) were administered the chemical via the dermal route under occlusion at 0, 0.14, 0.43 and 1.40 ml/kg (approximately 0, 143, 438 or 1430 mg/kg-day) on days 6 through 15 of gestation. Three of 35 dams died at the highest dose. Also at this dose, dams exhibited decreased food consumption and marked decrease in body weight gain, clinical signs of toxicity (irritability, hunched posture, walking on toes, piloerection, periorbital staining), and slight edema at the dose site. Resorption of 5/23 litters, reductions in litter size and weight occurred at the high dose. In addition, 160 of 161 high-dose fetuses exhibited skeletal and soft tissue changes (including anophthalmia/micropthalmia, ventricular septal defects, thoracic and lumbar vertebral defects, kinky tail, thoracic and cervical rib changes). The mid-dose resulted in increased incidence of fetuses with cervical ribs and thoracic vertebrae defects (TSCATS - OTS0509772 and OTS0509772-1).

**LOAEL (maternal toxicity) = 1430 mg/kg-day** (based on mortality and decreased body weight gain)

**NOAEL (maternal toxicity) = 438 mg/kg-day**

**LOAEL (developmental toxicity) = 438 mg/kg-day** (based on increased incidence of fetuses with cervical rib bud and defects of thoracic vertebrae)

**NOAEL (developmental toxicity) = 143 mg/kg-day**

(4) Pregnant CrL:COBS CD (SD) BR rats (group size not specified) were administered the chemical via the dermal route at 70, 140, 280, 430 or 700 mg/kg-bw/day on days 6 through 15 of gestation. Signs of dermal irritation (severity not specified) were seen in dams at all doses. Incomplete ossification and decreased fetal body weights were seen at all doses. Only limited information is available for this study and therefore, LOAELs and NOAELs are not presented.

### ***Genetic Toxicity – Other***

#### ***In vitro***

In a sister chromatid exchange assay, adult human whole-blood lymphocytes (from one male) were exposed to the test substance at concentrations of 0.1, 0.5, 1, 5 or 10 mM. Metabolic activation was not used. Control cultures were treated with acetone. Cytotoxicity was observed at 5 mM. This study is limited because it evaluated only sister chromatid exchange and did not include metabolic activation.

**CASRN 60-12-8 did not induce sister chromatid exchanges in this assay.**

**Conclusion:** The acute toxicity of CASRN 60-12-8 is low in rats by the oral, inhalation and dermal routes and is moderate in rabbits by the dermal route. A 90-day dermal repeated-dose toxicity study in rats showed decreases in body weights and body weight gains in males and females at the two highest doses and blood effects in males at 2040 mg/kg-day (highest dose tested); the NOAEL for systemic toxicity is 510 mg/kg-day. No reproductive toxicity studies are available; however, in the 90-day repeated-dose toxicity study, increases in gonadal weights were observed at 2040 mg/kg-day. In a prenatal developmental toxicity study in rats administered CASRN 60-12-8 via the diet, no effects on maternal or developmental parameters were observed; the NOAEL for maternal and developmental toxicity is 799 mg/kg-day (highest dose tested). In a prenatal developmental toxicity study in rats administered CASRN 60-12-8 via gavage, severe intoxication was reported in the dams at 432 mg/kg-day; the NOAEL for

maternal toxicity is 43.2 mg/kg-day. Increases in the numbers of fetuses with developmental abnormalities were observed at all doses; a NOAEL was not established. In a prenatal developmental toxicity study in rats administered CASRN 60-12-8 via the dermal route, increases in mortality and decreases in body weight gains were observed in the dams at 1430 mg/kg-day; the NOAEL for maternal toxicity is 438 mg/kg-day. An increase in fetuses with skeletal anomalies was seen at 438 mg/kg-day; the NOAEL for developmental toxicity is 143 mg/kg-day. CASRN 60-12-8 did not induce sister chromatid exchanges *in vitro*.

| <b>Table 3. Summary of the Screening Information Data Set as Submitted under the U.S. HPV Challenge Program – Human Health Data</b> |  |
|---|--|
| <b>Endpoints</b>  | <b>Phenethyl Alcohol (CASRN 60-12-8)</b>   |
| <b>Acute Oral Toxicity<br/>LD<sub>50</sub> (mg/kg)</b>  | <b>1500</b>  |
| <b>Acute Inhalation Toxicity<br/>LC<sub>50</sub> (mg/L)</b>   | <b>&gt; 4.63</b>   |
| <b>Acute Dermal Toxicity<br/>LD<sub>50</sub> (mg/kg)</b>  | <b>805</b>   |
| <b>Repeated-Dose Toxicity<br/>NOAEL/LOAEL<br/>Dermal (mg/kg-day)</b>  | <b>NOAEL = 510<br/>LOAEL = 1020</b>  |
| <b>Reproductive Toxicity<br/>Dermal</b>   | No histopathological changes in reproductive organs evaluated in repeated-dose study; increased relative testes weights at highest dose (2040 mg/kg-day) |
| <b>Developmental Toxicity<br/>NOAEL/LOAEL<br/>Oral (mg/kg-day)</b>  | <b>NOAEL(maternal) = 43<br/>LOAEL (maternal) = 432<br/>NOAEL(developmental) = Not established<br/>LOAEL (developmental) = 4.32</b>                       |
| <b>Developmental Toxicity<br/>NOAEL/LOAEL<br/>Dermal (mg/kg-day)</b>  | <b>NOAEL (maternal) = 438<br/>LOAEL (maternal) = 1430<br/>NOAEL (developmental) = 143<br/>LOAEL (developmental) = 438</b>                                |
| <b>Genetic Toxicity – Gene Mutations <i>in vitro</i></b>  | Data gap   |
| <b>Genetic Toxicity – Chromosomal Aberrations <i>in vitro</i></b>   | Data gap   |

#### 4. Hazard to the Environment

The environmental hazard data are summarized in Table 4.

##### *Acute Toxicity to Fish*

Golden orfes (*Leuciscus idus*; 10/concentration) were exposed to CASRN 60-12-8 at nominal concentrations of 100, 215, 464 or 1000 mg/L under static conditions for 96 hours. All fish died at 464 and 1000 mg/L. Tumbling was reported in some fish at 215 mg/L.

**96-h LC<sub>50</sub> = 215 mg/L**

##### *Acute Toxicity to Aquatic Invertebrates*

Water fleas (*Daphnia magna* Straus; 20/concentration) were exposed to CASRN 60-12-8 at nominal concentrations of 31.25, 62.5, 125, 250 or 500 mg/L under static conditions for 48 hours. All daphnids at 500 mg/L were immobile by 48 hours.

**48-h EC<sub>50</sub> = 287 mg/L**

##### *Toxicity to Aquatic Plants*

Green algae (*Scenedesmus subspicatus*) were exposed to CASRN 60-12-8 at nominal concentrations of 200, 280, 400, 560, 800 or 1600 mg/L under static conditions for 72 hours. Detailed effects on biomass at each test concentration were not reported.

**72-h EC<sub>50</sub> (biomass) = 490 mg/L**

**Conclusion:** For CASRN 60-12-8, the 96-hour LC<sub>50</sub> for fish is 215 mg/L (nominal). The 48-hour EC<sub>50</sub> for aquatic invertebrate is 287 mg/L (nominal). The 72-hour EC<sub>50</sub> for aquatic plants is 490 mg/L (nominal).

| <b>Table 4. Summary of the Screening Information Data Set as Submitted under the U.S. HPV Challenge Program – Aquatic Toxicity Data</b> |  |
|---|--|
| <b>Endpoints</b>  | <b>Phenethyl Alcohol (CASRN 60-12-8)</b> |
| <b>Fish</b><br><b>96-h LC<sub>50</sub> (mg/L)</b>   | <b>215*</b>                              |
| <b>Aquatic Invertebrates</b><br><b>48-h EC<sub>50</sub> (mg/L)</b>  | <b>287*</b>                              |
| <b>Aquatic Plants</b><br><b>72-h EC<sub>50</sub> (mg/L) (biomass)</b>   | <b>490*</b>                              |

Bold = measured data; \*Nominal concentrations

## 5. Reference

Mankes, R.F., LeFevre, R., Bates, H., Abraham, R. 1983. Effects of various exposure levels of 2-phenylethanol on fetal development and survival in Long-Evans rats. *Journal of Toxicology and Environmental Health, Part A*. 12(2): 235-244.

Owston, E., Lough, R., Opdyke, D.L. 1981. A 90-day toxicity study of phenylethyl alcohol in the rat. *Food and Cosmetics Toxicology*. 19: 713-715.