

Phenol, isopropylated, phosphate (3:1)

Technical Report for EPA Docket No. EPA-HQ-OPPT-2016-0730
On production, imports, use, recycling, and other exposure scenarios

Healthy Building Network
In Collaboration with
Safer Chemicals Healthy Families, Earthjustice, Natural Resources Defense Council,
and the Environmental Health Strategy Center

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1. Identifying Information

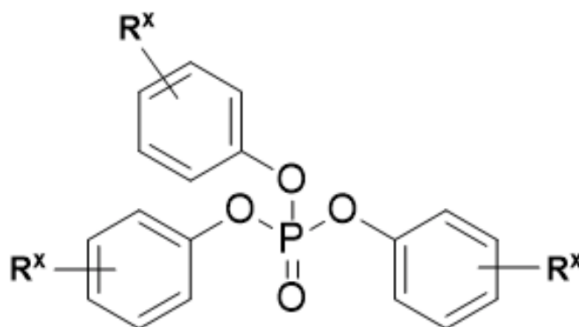
CASRN: See below.

UN Shipping Code: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID NOS

Harmonized Tariff Schedule Numbers: 3819.00.0090

Synonyms: See below.

TSCA Docket: [EPA-HQ-OPPT-2016-0730](#)



Where $R^x = H$ or $CH(CH_3)_2$ and all three rings have at least one $-CH(CH_3)_2$ group.

EPA defines the suite of chemicals incorporated under the category Phenol, isopropylated, phosphate (3:1) by “the chemical structure for phenol, isopropylated, phosphate (3:1) shown on the cover [of the Preliminary Information Document, which] constitutes a family of structures in which each of the three aryl groups have at least one isopropyl group. Examples of chemicals covered by this document that meet this general structure include:

- Tris(3-isopropylphenyl) phosphate
- Tri(isopropylphenyl) phosphate
- Tri(4-isopropylphenyl) phosphate.”¹

Numerous substances fit this structure. As Ryan Carra, associate at Beveridge & Diamond law firm, notes in his submission to this docket,² related CAS numbers are “generally regarded as applying to a mixture of isomers,” and components can include:

¹ https://www.epa.gov/sites/production/files/2017-08/documents/pip3-1_-_use_information_8-10-17.pdf

² <https://www.regulations.gov/document?D=EPA-HQ-OPPT-2016-0730-0002>

- Tris(4-isopropylphenyl) phosphate (CASRN 68937-41-7, also known as Phenol, isopropylated, phosphate (3:1) and isopropyl phenyl phosphate)
- Isopropylated phenyenyyl phosphate (CASRN 58570-87-9)
- Triphenyl phosphate, TPP (CASRN 115-86-6)
- 4-isopropylphenyl diphenyl phosphate (CASRN 55864-04-5)
- 2-isopropylphenyl diphenyl phosphate (CASRN 64532-94-1)
- Isopropyl phenyl diphenyl phosphate (CASRN 28108-99-8, CASRN 101299-37-0)
- 2-(1-Methylethyl)phenyldiphenyl ester phosphoric acid mixture w/ triphenyl phosphate (CASRN 96300-97-9, CASRN 66797-44-2)
- Di(isopropylphenyl)phenylphosphate (CASRN 28109-00-4)
- Di(2-isopropylphenyl)phenylphosphate (CASRN 69500-29-4)
- Tri(3-isopropylphenyl)phosphate (CASRN 72668-27-0)
- Tri(isopropylphenyl)phosphate (CASRN 26967-76-0)
- Tri(4-isopropylphenyl)phosphate (CASRN 2502-15-0)
- 3,4-bis(1-methylethyl)phenyl diphenyl ester (CASRN 68155-51-1)³

There are potentially hundreds of variations of formulations, and CASRN, that fit EPA's category.

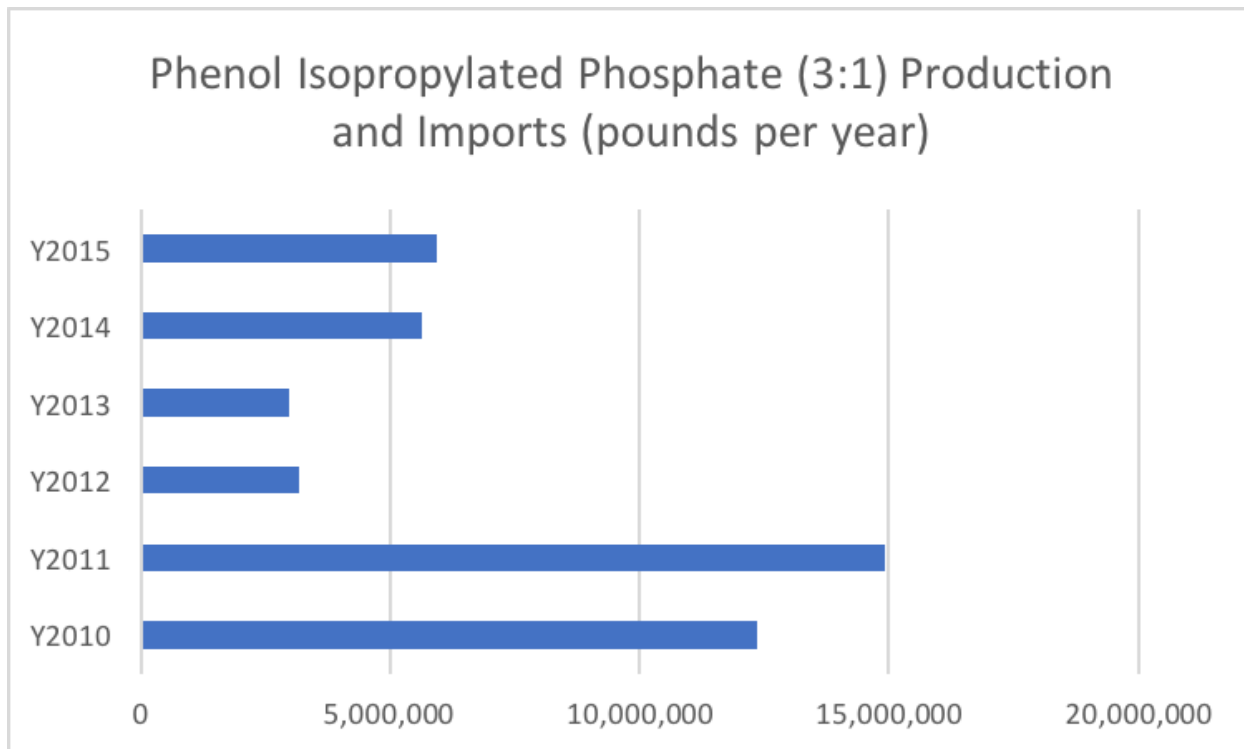
2. Research Methods

In collaboration with Safer Chemicals Healthy Families and the Environmental Health Strategy Center, the Healthy Building Network (HBN) research team reviewed Chemical Data Reporting (CDR) submissions for phenol, isopropylated, phosphate (3:1), as published on the EPA ChemView database, and EPA's Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal (published in August 2017). HBN cross-referenced this information with a variety of national, European and United Nations reports, chemical industry literature, and a shipping database (Panjiva) with the goal of identifying potentially missing producers, importers, uses and other potential sources of exposure to phenol, isopropylated, phosphate (3:1).

Findings that are not included in the EPA Preliminary Information document, or are not named in CDR forms, are highlighted in **yellow**.

³ Email from Ryan Carra, Beveridge & Diamond, to Maria Doa, EPA, Feb. 10, 2017.; Hazard associations from Healthy Building Network's *Pharos Project* Chemicals and Materials Library, <http://www.pharosproject.net>.

3. Production/Trade



HBN Table. Data Source: EPA Preliminary Information Document

Production (including imports) in the United States has averaged around 2,200 tons per year.⁴

a. Domestic Producers

Only one company (ICL) reported domestically producing (not importing) phenol, isopropylated, phosphate (3:1) in 2012 and 2016 CDR forms.

The CDRs reviewed for this report were associated with the CASRN 68937-41-7. EPA's Chemview database was searched for the additional CASRN listed in the Identifying Information section of this report, but no additional CDRs were found.

ICL Industrial Products (ICL-IP) America, Inc (Gallipolis Ferry, WV)

ICL-IP America reported domestic manufacturing in their 2012 and 2016 CDRs. In the 2012 CDR, this company reported manufacturing 3,615,127 lbs in 2011, with 542,269

⁴ EPA Preliminary Information document.

lbs exported and 3,072,858 lbs used on site. ICL-IP Amercia reported producing 2,296,040 lbs in 2010. Volumes were withheld in the 2016 CDR.

On April 13, 2015, according to Panjiva database records, ICL shipped 17,057 of Phosflex 41 (a mixture of triphenyl phosphate and triphenyl phosphate, isopropylate) to South Korea. On July 17, 2015, Vanguard Logistics Services exported 2,136 pounds of Phosflex 41L to South Africa.⁵

Phosflex 41L, explains the ICL-IP website, “is a substituted triaryl phosphate ester made exclusively from synthetic feedstocks. It has excellent flame retarding characteristics, which are typical of the triaryls. This flame retarding efficiency permits back-blending with non flame retarding plasticizers, resulting in favorable economics and wide flexibility to formulators. While used primarily in PVC formulations, Phosflex™ 41L finds compatibility and utility in other resin systems as well.”⁶

The CDRs list uses as flame retardants in plastic materials, resin manufacturing, and rubber products, for commercial and consumer products. Whether any of these products are intended for children was indicated to be “Not known or reasonably ascertainable.”

Workers in factories manufacturing phenol, isopropylated, phosphate (3:1) may also be exposed to the chemical. OSHA issued two serious violations for ICL-IP’s Gallipolis Ferry facility in 2012, resulting in a penalty of \$9,000.⁷

ICL’s 2012 CDR submission estimates that 100-499 workers are likely exposed in industrial processing. The number of commercial workers likely exposed is 100-499. The 2016 CDR says these numbers are “Not known or reasonably ascertainable.”

Fenceline communities may be exposed to airborne or waterborne releases of phenol, isopropylated, phosphate (3:1) from facilities that manufacture the chemical. (See the table at the end of this section for more information about communities living near facilities that produce or use this chemical.)

ICL’s factory in Gallipolis Ferry, West Virginia has had a series of accidents and non-compliance issues. EPA has found it to be in non-compliance with the Clean Water Act for 6 of the last 12 quarters.⁸ ICL settled a claim with the EPA for \$14,854 in connection

⁵ Panjiva trade database

⁶ <http://icl-ip.com/products/phosflex-41/>

⁷ https://www.osha.gov/pls/imis/establishment.inspection_detail?id=436531.015

⁸ <https://echo.epa.gov/detailed-facility-report?fid=110000607772>

with a release of ethylene oxide from this facility in 2014. The penalty was assessed for failing to “immediately notify the Local Emergency Planning Committee (LEPC)” of the release and failing to “provide a written follow-up emergency notice, as soon as practicable.”⁹ In 2016, a phosphorus fire at the plant led the surrounding community, including hundreds of school children nearby, to shelter in place.¹⁰

According to the Danish government, ICL-IP also produces this chemical in Europe;¹¹ however, there are no records of ICL shipments of this chemical from Europe to the U.S. over the last three years.

b. Imports

All identifiable imports in the Panjiva trade database came from a Lanxess factory in the United Kingdom. Overall production in the European Union is estimated as 1,000 to 10,000 metric tons.¹²

Lanxess (formerly Chemtura, Manchester, England, U.K.) → Lanxess (U.S.)

Chemtura (formerly Great Lakes Chemical, now Lanxess) reported but did not disclose the weight of imports in a 2016 CDR. The imported chemicals are used in lubricants and lubricant additives, as a flame retardant in plastic product manufacturing, as a flame retardant for photographic film paper, plate, and chemical manufacturing. Some of these products are 100% phenol, isopropylated, phosphate (3:1).

These chemicals also used in consumer products such as foam seating and bedding, including those intended for children. The concentration in consumer products is listed as between 1% and 30% by weight.

Lanxess completed a takeover of Chemtura in 2017, including the manufacturing plant in Trafford Park, Manchester, England.¹³ This plant has been producing phosphate-based plasticizers since 1939, and more recently has also produced flame retardants and other additives. It was formerly owned by Ciba Geigy, FMC Corporation, and Great Lakes Chemical.¹⁴

⁹ <https://echo.epa.gov/enforcement-case-report?id=03-2017-0002>

¹⁰ <http://www.wsaz.com/content/news/Shelter-in-place-issued-after-chemical-plant-incident-in-Mason-County-WVa-391891561.html>

¹¹ <https://www2.mst.dk/Udgiv/publications/2016/01/978-87-93435-23-0.pdf>

¹² <https://echa.europa.eu/registration-dossier/-/registered-dossier/13333/1>

¹³ <http://www.chemtura.com/pages/home.aspx>

¹⁴ <http://lanxess.co.uk/en/about-lanxess-uk/our-sites/trafford-park/>

The Chemtura CDR form suggests that, in the United States, at least 310 but fewer than 1,225 industrial workers are likely exposed to these imported chemicals. The number of commercial workers likely exposed are at least 500 but fewer than 1,000.

Lanxess product imports from Europe include, in part, Reolube Phosphate Ester Base Stocks. This line includes one product listed in EPA's Preliminary Information: Reolube HYD 46. The product contains 87% to 93% phenol, isopropylated, phosphate (3:1), with the balance being triphenyl phosphate (CASRN 115-86-6), according to a 2009 safety data sheet.¹⁵ Chemtura imports other fire resistant fluids -- Reolube 140 and Reolube Turbofluid -- which also contain contain phenol, isopropylated, phosphate (3:1).¹⁶ These formulations are designed for use in general industry and power generation, respectively.¹⁷

According to the Danish government, the Reofos 35 to 95 series contains phenol, isopropylated, phosphate (3:1).¹⁸ In addition, Chemtura imports a product (not publicized elsewhere) with the tradename Reofos 1800. According to bills of lading, this product is a mixture of phenol, isopropylated, phosphate (3:1) and triphenyl phosphates.¹⁹

EPA's Preliminary Information lists three variations of Lanxess' Durad flame retardant and lubricant line: Durad 150, Durad 220, and Durad 310M. The Panjiva trade database lists many shipments of Durad 150 from the United Kingdom plant.

Lanxess also produces Firemaster 550, which contains up to 70% phenol, isopropylated, phosphate (3:1), and is used in carpets²⁰ and other building products.²¹

Confidential Business Information

One company reported imports with the company name claimed as CBI in 2012. There was a CDR from 2016 where the company name was claimed as CBI as well - and this time, whether the chemical was manufactured or imported was also held as CBI. No volumes were reported in these CDRs. Uses reported in the 2012 form included lubricants and lubricant additives, furniture and furnishings, and plastic and rubber

¹⁵ <http://forsythelubrication.ca/media/2015/10/pc.6613.pdf>

¹⁶ Panjiva trade database

¹⁷ http://add.lanxess.com/fileadmin/user_upload/Formulated_lubricants_04-2017_1.pdf

¹⁸ <https://www2.mst.dk/Udgiv/publications/2016/01/978-87-93435-23-0.pdf>

¹⁹ Panjiva trade database

²⁰ <https://healthybuilding.net/uploads/files/eliminating-toxics-in-carpet-lessons-for-the-future-of-recycling.pdf>

²¹ <http://chemturaflameretardants.com/>

products. The 2016 CDR form listed uses as photographic supplies, film, and photo chemicals.

Lanxess (formerly Chemtura, Manchester, England, U.K.) → Fujifilm (Greenwood, S.C.)

According to Panjiva, Fujifilm imported Reofos® 35 and Reofos 65, liquids containing phenol, isopropylated phosphate (3:1). Reofos 35 is a flame retardant plasticizer used in plastisols for fabric coating and can also be used in phenolic laminates.²² The Safety Data Sheet (SDS) also describes its use as a flame retardant and a lubricant. According to the SDS, Reofos 35 is 90-100% phenol, isopropylated, phosphate (3:1).²³

Reofos 65 is recommended “as a flame retardant for PVC, flexible polyurethanes, cellulosic resins, and synthetic rubber. Reofos 65 is also recommended as a flame retardant processing aid for engineering resins, such as modified PPO, polycarbonate, and polycarbonate blends.” The primary uses are noted as a flame retardant plasticizer in PVC and phenolic resins.²⁴ The SDS describes it as a flame retardant and an additive. According to the SDS, Reofos 65 is 90-100% phenol, isopropylated, phosphate (3:1).²⁵

Fujifilm’s imports of Reofos 35 and 65 totalled 111,554 lbs in 2016 and 158,204 lbs in 2015. Because the products are a minimum of 90% phenol, isopropylated, phosphate (3:1), the 2015 imports were a minimum of 142,384 lbs of phenol, isopropylated, phosphate (3:1), much more than EPA’s reporting thresholds of 25,000 lbs.

This may have been the company that claimed its identity as CBI in the CDRs. In the 2016 submission, the unnamed company reported that all of the imported phenol, isopropylated, phosphate (3:1) was used as a solvent (which becomes part of product formulation or mixture) in “photographic film paper, plate, and chemical manufacturing.” Both consumer and commercial use of the product were reported.

Patents issued to Fujifilm in 2007 and 2011 describe the use of Reofos as a plasticizer in a “photosensitive composition” used in photosensitive film, laminate, and printed board.²⁶

²² http://157.185.153.54/7577748.s21d-7.faiusrd.com/61/ABUIABA9GAAgt5T0ugUopruzny.pdf?wsrid_tag=5a57e1f1_landa93_993-47635&wsiphost=local

²³ http://www.chemtura.com/msd/external/e/search/msds_main_fs_1.jsp?P_LANGU=E&P_SYS=6

²⁴ <http://7577748.s21d-7.faiusrd.com/61/ABUIABA9GAAgmJX0ugUo1LGW3gQ.pdf>

²⁵ http://www.chemtura.com/msd/external/e/search/msds_main_fs_1.jsp?P_LANGU=E&P_SYS=6

²⁶ <https://patents.google.com/patent/US8557948B2/en>

Chevron Oronite Co (Belle Chasse, LA)

Chevron reported imports through CDR in 2012, but not in 2016. The volume was held as CBI, but it was reported that the chemical was physically at the import site. No related shipments were found for the period Jan. 11, 2015 to Jan. 10, 2018 in the Panjiva trade database.

Uses reported in the CDR include lubricants and lubricant additives and greases. The products are for commercial and consumer use, but not used in products intended for children.

The CDR reports that 50-99 workers are likely exposed in industrial processing. The number of commercial workers likely exposed is 10,000+.

This plant has been in noncompliance with the Clean Water Act for 4 of the last 12 quarters, with a significant violation in Q3 of 2017.²⁷

Chevron Oronite produces lubricants, such as Case Akcela Hy-Tran Ultra, that contain up to 1.5% triphenyl phosphate.²⁸

Special Materials Company (New York, NY)

Special Materials Company, a chemical broker, reported imports in a 2012 CDR and withheld information as to whether the chemical was manufactured or imported in a 2016 CDR. The 2012 CDR reports that the chemical is never physically on site (2016 CDR withholds this information). No related shipments were found for the period Jan. 11, 2015 to Jan. 10, 2018 in the Panjiva trade database. The 2012 CDR reports that the number of workers likely exposed is <10. This information is withheld in the 2016 reporting. No use information is provided in the CDRs.

Univar/Chempoint (Bellevue, WA)

Univar reported imports in a 2016 CDR. Volumes are withheld, but volume exported was reported as 42,094 lbs and the chemical was reported as never physically on site. The CDR reports use in synthetic rubber manufacturing, lubricants and lubricant additives, and as a flame retardant in the following: paint and coating manufacturing, adhesive manufacturing, transportation equipment manufacturing, and plastic material

²⁷ <https://echo.epa.gov/detailed-facility-report?fid=110000575244>

²⁸ <http://www.viscosityoil.com/pdf/msds/New-Holland-Ambra-Mastertran.pdf>

and resin manufacturing. No related shipments were found for the period Jan. 11, 2015 to Jan. 10, 2018 in the Panjiva trade database.

Chempoint, a chemical broker arm of Univar, lists several Lanxess products containing phenol, isopropylated, phosphate (3:1) on its website, including: Durad 150, Durad 310M, Reofos 35, Reofos 50, Reofos 65, Reofos 95, and Firemaster 550.²⁹

Akzo Nobel (International Paint facilities in Houston, TX, and Union, NJ)

International Paint is Akzo Nobel's brand line of marine, yacht, and protective coatings.³⁰

Akzo Nobel's International Paint site in Houston reported imports in a 2016 CDR. Volume used on site was reported as 153,000 lbs for use in commercial paints and coatings. The number of industrial workers likely exposed is "At least 100 but fewer than 500 workers." The number of commercial workers exposed is listed as "Not known or reasonably ascertainable."

The Panjiva database shows two imports of this chemical in 2016 by Akzo Nobel / International Paint, totalling 73,000 lbs. No other imports of phenol, isopropylated phosphate (3:1) were found for this facility in the last three years.

There are many International Paint products not listed in EPA's Preliminary Information that contain phenol, isopropylated, phosphate (3:1), including:

- Chartek 7, a two-part epoxy coating (contains phenol, isopropylated, phosphate (3:1) at 1.0-10% by weight%);³¹
- Micron Premium coating (contains phenol, isopropylated, phosphate (3:1) at 1.0-10% by weight%);³²
- Micron Extra, a marine anti-fouling paint (contains phenol, isopropylated, phosphate (3:1) at 1-2.5 weight%).³³ This is also sometimes under the label Interlux;³⁴ and

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<https://www.google.com/search?q=isopropylated+site%3Achempoint.com&oq=isopropylated+site%3Achempoint.com>

³⁰ <https://www.akzonobel.com/about-us/who-we-are/brand/international>

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https://international.brand.akzonobel.com/m/4ade846938837907/original/302120_CA_EN_20170116_1.pdf

³² http://datasheets1.international-coatings.com/msds/YBA937_USA_eng_B9.pdf

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https://d38644sh3qigm4.cloudfront.net/documents/SDS/YBA924E6_GBR_ENG.pdf?mtime=20170516112503

- Interspeed 5460, a marine anti-fouling paint³⁵ (contains phenol, isopropylated, phosphate (3:1) at 1.0-10% by weight%)³⁶

Akzo Nobel also submitted a CDR for a location in Union, N.J. in 2016, but withheld information on whether the material was manufacture or imported, the volumes, and whether the chemical was ever physically at the site. Reported use in the CDR is as a plasticizer in paints and coatings. The number of industrial workers likely exposed is at least 50 but fewer than 100. Workers exposed in commercial use is “Not known or reasonably ascertainable.” No related shipments to this facility were found for the period Jan. 11, 2015 to Jan. 10, 2018 in the Panjiva trade database.

This facility has been in significant violation of the Resource Conservation and Recovery Act (RCRA) for 11 of the last 12 quarters and is considered a “significant noncomplier.” They have had four formal enforcement actions and two informal enforcement actions in the last five years - penalties totaling \$22,650.³⁷

c. Other companies with CDRs that don't identify whether the chemical was imported or manufactured

Old World Industries (Northbrook, IL)

This import-export company submitted a CDR in 2016 but withheld information on whether the material was manufacture or imported, the volumes, and whether the chemical was ever physically at the site. The CDR reports use in **DIY consumer automotive adhesive and sealant chemicals and in automotive care products for commercial and consumer use**. No related shipments were found for the period Jan. 11, 2015 to Jan. 10, 2018 in the Panjiva trade database.

Shell Chemical LP

Shell's global headquarters in Houston submitted a CDR in 2016 that indicates use in its commercial lubricants and greases. Shell withheld information on whether the material was manufactured or imported, and volumes thereof.

³⁴ <https://www.amazon.com/Interlux-Micron-Extra-Anti-Fouling-Gallon/dp/B001HX31GE>

³⁵

https://marinecoatings.brand.akzonobel.com/m/076b3f116581d904/original/Interspeed_5640_eng_usa_A4_20160519.pdf

³⁶

https://marinecoatings.brand.akzonobel.com/m/5b359dd502b9179c/original/BZA646_US_EN_20150723_1.pdf

³⁷ <https://echo.epa.gov/detailed-facility-report?fid=110000319174>

The chemical could not be identified in any safety data sheets for Shell or Pennzoil-Quaker State products sold in the U.S. However, related products are sold by a third party, Nye Lubricants, which has an agreement with Shell to resell Pennzane multiply-alkylated cyclopentane fluids.³⁸ These fluids are used “from zero gravity to virtual reality” in “lubrication systems for the most advanced and evolving technologies including space mechanisms, vacuum manufacturing of semiconductors, computer hard drives and magnetic disks.”³⁹

Nye’s “Handout Sheet” for Pennzane lists a number of synthetic fluids, including “Nye Synthetic Oil 1001” which contains “amine and phenolic antioxidants and alkylated triphenyl phosphate”⁴⁰ (the SDS calls its composition a “trade secret”⁴¹). Nye Synthetic Oil is sold with a “companion” grease: Rheolube 1000. The safety data sheet for Rheolube lists triphenyl phosphate (CAS RN 115-86-6) as present at <1%.⁴²

4. Use

In 2016, the Danish government reviewed the composition of phosphorous flame retardants, including three product lines that contain phenol, isopropylated, phosphate (3:1): Everkem’s EVERFOS 1350 - 1950 series (made in Europe; there are no Panjiva records of its import into the U.S.); Lanxess’ Reofos 35 - 95 series; and, ICL’s Phosflex 31L and Phosflex 41L flame retardants. The report says these flame retardants are used in many types of plastics not included in EPA’s Preliminary Information, including: PVC, cellulosic resins, EPDM, High Impact Polystyrene (HIPS), Poly(phenylene oxide)/HIPS alloys, polycarbonate, polycarbonate/ABS alloys, rigid polyurethane, and thermoplastic polyurethane.⁴³

In addition, as discussed above, our research into the companies that have imported or reported use of phenol, isopropylated, phosphate (3:1) uncovered these uses not included in EPA’s Preliminary Information:

- Mechanisms on spacecraft
- Vacuum manufacturing of semiconductors
- Vacuum manufacturing of computer hard drives

³⁸

https://www.nyelubricants.com/stuff/contentmgr/files/0/d7c399d4199b30e3281882d9a2372b2a/en/nyecorporate_overview.pdf

³⁹ <https://www.nyelubricants.com/pennzane>

⁴⁰

https://www.nyelubricants.com/stuff/contentmgr/files/0/637980edff9e51aca814340ddcd91c1d/en/lube_insights_pennzane.pdf

⁴¹ https://www.nyelubricants.com/datasheet/SDS_US_English_SYNTHETIC+OIL+1001.pdf

⁴² https://www.nyelubricants.com/datasheet/SDS_US_English_RHEOLUBE+1000.pdf

⁴³ <https://www2.mst.dk/Udgiv/publications/2016/01/978-87-93435-23-0.pdf>

- Vacuum manufacturing of magnetic disks
- Phenolic laminates
- Photosensitive laminate
- Photosensitive board
- Power generation lubricant
- Fabric coating
- DIY consumer automotive adhesive and sealant chemicals
- Automotive care products for commercial and consumer use, and
- Foam seating and bedding, including those intended for children.

5. Other release and exposure scenarios

Aviation hydraulic fluids are a major use of these chemicals. ExxonMobil is a high volume consumer for its Hyjet IV-A and Hyjet V aviation hydraulic fluids. EPA's Preliminary Information notes these fluids contain between 10% and 20% phenol, isopropylated, phosphate (3:1). ExxonMobil exports Hyjet fluids around the world. In 2017, it made 112 shipments, totalling over 1,443 metric tons of fluid product.⁴⁴ Based on the low end percentage noted above (10% of the product), these fluids contained 318,000 pounds of phenol, isopropylated, phosphate (3:1).

Hydraulic fluid leaks are common. Their contents can harm passengers, crew and runway workers. For example, when hydraulic fluid leaked from an Airbus 320 heading to Philadelphia on July 21, 2016, passengers complained of eye and skin irritation and breathing difficulties. Twenty-four people were hospitalized.⁴⁵

Fluids used with other machines can also harm operators and other people, and release phenol, isopropylated, phosphate (3:1) into the environment.

The U.S. Department of Health and Human Services notes,

Hydraulic fluids can enter the environment from spills and leaks in machines that use them and from leaky storage tanks. **If spilled on soil, some of the ingredients in the hydraulic fluids mixture may stay on the top, while others may sink into the groundwater.** How fast the ingredients move through soil depends on many things. These include how much is spilled, how much rain falls on the spill, and the type of soil (for example, hydraulic fluids will move quickly in sandy soil, but will move slower in heavy clay). **In water, some ingredients of hydraulic fluids will transfer to the bottom and stay there. Fish may contain some hydraulic fluid**

⁴⁴ Panjiva trade database

⁴⁵ <http://abcnews.go.com/US/17-hospital-plane-leaks-hydraulic-fluid-taxiway/story?id=40780542>

ingredients if they live near places that make or use a lot of it... Exposures to hydraulic fluids occur mainly in workers using hydraulic equipment and in people who work on cars or tractors that use the fluids.⁴⁶

There is a high potential for reintroduction of flame retardants in electronic equipment plastics through recycling and dispersal in recycling facilities (see e.g., our HBCD submission from March 2017).⁴⁷

Several other products or materials using this chemical may be recycled into new products leading to further exposure both in recycling facilities and in the new use. These include hydraulic fluids, motor and transmission oil, furniture foam being recycled into items like rebond carpet padding,⁴⁸ and carpet.

APPENDICES

Fenceline communities may be exposed to airborne or waterborne releases of phenol, isopropylated, phosphate (3:1) from these facilities that manufacture or use the chemical in their manufacturing process. The facilities identified as the leading manufacturers and users of this chemical are listed below with demographic data for those living within a one-mile radius. Further demographic and environmental justice data is included in appendices to this submission.

Table. EJSscreen⁴⁹ for Phenol, isopropylated, phosphate (3:1) Facilities

Manufacturing or Major Use Facility	Population (1 mile radius)	Percent minority	Percent low income	Percentile low income in U.S.
National average	n/a	38%	34%	n/a
ICL-IP America, Inc (Gallipolis Ferry, WV)	996	4%	29%	45 th percentile
Chevron Oronite Co (Belle Chasse, LA)	550	24%	24%	44 th percentile
Akzo Nobel (Houston, TX)	17,965	85%	64%	89 th percentile
Akzo Nobel (Union, NJ)	18,119	52%	17%	24 th percentile

⁴⁶ <https://www.atsdr.cdc.gov/toxprofiles/tp99.pdf>

⁴⁷ <https://healthybuilding.net/uploads/files/saferchemicals-hbcd.pdf>

⁴⁸ <http://healthybuilding.net/uploads/files/optimize-recycling-fpf-report.pdf>

⁴⁹ <https://ejsscreen.epa.gov/mapper/>