

## 4. PRODUCTION, IMPORT, USE, AND DISPOSAL

### 4.1 PRODUCTION

2,3-Benzofuran is produced as a component of the crude heavy solvent fraction of the coal-tar light oil formed by the coking of bituminous coal (HSDB 1989; Windholz et al. 1983). 2,3-Benzofuran is not isolated for commercial purposes (HSDB 1989). The fraction of this coal-tar oil distilling at 167-184°C contains small quantities (probably less than 10%) (Powers 1980) of 2,3-benzofuran (also known as coumarone) and also indene (approximately 30%) (NTP 1989), indan, substituted benzenes, and related compounds (CFR 1989a). This fraction of coal oil is used to produce a polymer called coumarone-indene resin (Powers 1980). The polymerization is accomplished by addition of an acid catalyst such as boron trifluoride (NTP 1989) or sulfuric acid (HSDB 1989). Coumarone-indene resin hardens when heated and is used to make floor tiles and other products (HSDB 1989; Morris 1953; NTP 1989). Coumarone-indene resin is produced by the Neville Chemical Company of Neville Island, Pennsylvania (SRI 1989).

No quantitative data were located regarding the production of 2,3-benzofuran or coumarone-indene resin, although it is reported that virtually all of the resin-forming fraction produced by destructive distillation of coal is polymerized (Powers 1980). No information was located concerning the stability or decomposition products of coumarone-indene resin.

### 4.2 IMPORT/EXPORT

Imports of 2,3-benzofuran in 1977 and 1979 have been reported to be 1,840 metric tons and 0.0009 metric tons, respectively (HSDB 1989). Current information regarding 2,3-benzofuran import was not located.

No data were located regarding the export of 2,3-benzofuran.

### 4.3 USE

2,3-Benzofuran is not isolated for commercial purposes, and no information was located regarding uses of isolated 2,3-benzofuran. However, the coumarone-indene resin may be used as a coating on grapefruit, lemons, limes, oranges, tangelos, and tangerines (CFR 1989a). Coumarone-indene resin is also used in the production of paints and varnishes for corrosion-resistant coatings (Morris 1953; NTP 1989) and water-resistant coatings on paper products and fabrics (NTP 1989) and as adhesives in food containers (CFR 1989d). Coumarone-indene resin has been used in asphalt floor tiles (Morris 1953; Wilson and McCormick 1960).

No data were located which would indicate the extent to which 2,3-benzofuran or coumarone-indene resin is currently used in these products.

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**4.4 DISPOSAL**

2,3-Benzofuran is not listed as a hazardous waste by the EPA. No data were located regarding rules or regulations which control the disposal of 2,3-benzofuran.

No data were located regarding disposal methods or disposed quantities of waste 2,3-benzofuran.