

 **TOXICS RELEASE INVENTORY**
List of Toxic Chemicals within Warfarin Category

Section 313 of EPCRA requires certain facilities manufacturing, processing, or otherwise using listed toxic chemicals to report their environmental releases of such chemicals annually. Beginning with the 1991 reporting year, such facilities also must report pollution prevention and recycling data for such chemicals, pursuant to section 6607 of the Pollution Prevention Act, 42 U.S.C. 13106. When enacted, section 313 established an initial list of toxic chemicals that was comprised of more than 300 chemicals and 20 chemical categories. Section 313(d) authorizes EPA to add chemicals to or delete chemicals from the list, and sets forth criteria for these actions.

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Section 1. Introduction

On November 30, 1993 EPA added 21 chemicals and 2 categories to the list of toxic chemicals under section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (58 FR 63500). These additions are described at 40 CFR 372.65, and are effective January 1, 1994 for reports due July 1995. Two chemical categories (ethylenebisdithiocarbamic acid (EBDC), salts and esters; warfarin and salts) are included in these additions. At the time of the addition, EPA indicated that the Agency would work with the public and the regulated community to develop, as appropriate, interpretations and guidance the Agency determines are necessary to facilitate accurate reporting for these categories. This document constitutes such guidance for warfarin and salts.

EPCRA section 313 requires threshold determinations for chemical categories to be based on the total of all chemicals in the category manufactured, processed, or otherwise used. For example, a facility that manufactures three members of a chemical category would count the total amount of all three chemicals manufactured towards the manufacturing threshold for that category. When filing reports for chemical categories, the releases are determined in the same manner as the thresholds. One report is filed for the category and all releases are reported on this form.

The warfarin salts category is subject to the one percent *de minimis* concentration. Thus, mixtures that contain members of these categories equal to or in excess of the *de minimis* should be factored into threshold and release determinations.

Any compound which has a warfarin salt component is reportable. EPA is providing the following list of CAS numbers and chemical names to aid the regulated community in determining whether they need to report the Warfarin category. However, this list is not exhaustive. If a facility is manufacturing, processing, or using a chemical which has a warfarin salt component, they must report to TRI, even if this chemical does not appear on the following list.

Who Must Report

A plant, factory, or other facility is subject to the provisions of Section 313, if it meets all three of the following criteria:

- It is included in a covered Standard Industrial Classification (SIC) code as listed in the following table; and

| Industrial Sector | SIC code |
|---|---|
| Manufacturing | 20-39 |
| Metal mining | 10 (except 1011, 1081, and 1094) |
| Coal Mining | 12 (except 1241) |
| Electrical utilities | 4911, 4931, and 4939, limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce |
| Treatment, Storage, and Disposal facilities | 4953, limited to RCRA Subtitle C permitted or interim status facilities |
| Solvent recovery services | 7389, limited to facilities primarily engaged in solvent recovery services on a contract or fee basis |
| Chemical distributors | 5169 |
| Petroleum bulk terminals | 5171 |

- It has 10 or more full-time employees (or the equivalent 20,000 hours per year); and
- It manufactures, imports, processes, or otherwise uses any of the toxic chemicals listed on the EPCRA Section 313 list in amounts greater than the "threshold" quantities specified below.

Thresholds

Thresholds are specified amounts of toxic chemicals used during the calendar year that trigger reporting requirements.

If you *manufacture* or *import* any of the listed toxic chemicals, the threshold quantity will be:

- 25,000 pounds per toxic chemical or category over the calendar year.

If you *process* any of the listed toxic chemicals, the threshold quantity will be:

- 25,000 pounds per toxic chemical or category over the calendar year.

If you *otherwise use* any of the listed toxic chemicals (without incorporating it into any product or producing it at the facility), the threshold quantity is:

- 10,000 pounds per toxic chemical or category over the calendar year.

Section 2. CAS Number List of Chemicals that have CAS numbers within the Warfarin Category

EPA is providing the following list of CAS numbers and chemical names to aid the regulated community in determining whether they need to report for the Warfarin category. However, this list is not exhaustive. If a facility is manufacturing, processing, or using a chemical which has a Warfarin component, they must report to TRI, even if this chemical does not appear on the following list.

| Table 1. Listing by CAS Number of Each Individual Chemical within the Warfarin and Salts Category | | |
|--|--------------------------|-------------|
| Collective Index Name | Common Name | CAS Number |
| Warfarin | N/A | 81-81-2 |
| 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, sodium salt | Warfarin sodium salt | 129-06-6 |
| Coumarin, 3-(.alpha.-acetylbenzyl)-4-hydroxy-, calcium salt | Warfarin calcium salt | 2084-55-1 |
| Coumarin, 3-(.alpha.-acetylbenzyl)-4-hydroxy-, magnesium salt | Warfarin magnesium salt | 2084-56-2 |
| 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, potassium salt | Warfarin, potassium salt | 2610-86-8 |
| 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, lithium salt | Lithium warfarin | 2784-36-3 |
| 2H-1-benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, sodium salt, (S)- | Sodium S-warfarin | 5543-79-3 |
| 2H-1Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, sodium salt, (R)- | Sodium R-warfarin | 36508-91-5* |
| 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, sodium salt, (.+-.)- | (.+-.)-Warfarin sodium | 51821-81-9* |
| 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, thallium(1+) salt | Warfarin, thallium salt | 67523-25-5* |

* - Indicates the mixtures under this category

Section 3. CAS Number List of Mixtures Within the Warfarin Category

EPA is providing the following list of CAS numbers and chemical names for mixtures which contain Warfarin and its salts. This list will aid the regulated community in determining whether they need to report for the Warfarin category. However, this list is not exhaustive. If a facility is manufacturing, processing, or using a mixture that contains Warfarin or a Warfarin salt component, they must report to TRI, even if this chemical does not appear on the following list. Threshold calculations for the Warfarin category should account only for the percentage of the Warfarin component contained in the mixture.

| Table 2. Mixtures Containing Warfarin and its Salts | | |
|--|-------------------------------------|--------------------|
| Mixture Name | Warfarin Component | Mixture CAS Number |
| Benzenesulfonamide, 4-amino-N-2-quinoxaliny-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 37341-99-4 |
| 1,2,3-Propanetricarboxylic acid, 2-hydroxy-, sodium salt, mixt. with acetaldehyde, 2-butanone, N,N-dimethylmethanamine, formaldehyde, .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl), 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one sodium salt and 2,2',2''-nitrilotris[ethanol] | Warfarin Sodium Salt 129-06-6 | 39366-36-4 |
| 9,10-Secoergosta-5,7,10(19),22-tetraen-3-ol, (3.beta.,5Z,7E,22E)-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 54842-06-7 |
| 1H-Indene-1,3(2H)-dione, 2-(2,2-dimethyl-1-oxopropyl)-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 58934-24-0 |
| Benzenesulfonamide, N-[(butylamino)carbonyl]-4-methyl-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 60177-49-3 |
| Retinol, acetate, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 63610-50-4 |
| Antimycin A, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 64782-63-4 |
| 1H-Indole-3-acetic acid, 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-10-1 |
| 2-Naphthaleneacetic acid, 6-methoxy-.alpha.-methyl-, (S)-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-11-2 |
| 2H-1,2-Benzothiazine-3-carboxamide, 4-hydroxy-2-methyl-N-2-pyridinyl-, 1,1-dioxide, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-09-8 |
| 2H,5H-1,3-Oxazino[5,6-c][1,2]benzothiazine-2,4(3H)-dione, 5-methyl-3-(2-pyridinyl)-, 6,6-dioxide, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-12-3 |

| Table 2. Mixtures Containing Warfarin and its Salts | | |
|---|---------------------|--------------------|
| Mixture Name | Warfarin Component | Mixture CAS Number |
| Benzoic acid, 2-(acetyloxy)-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-08-7 |
| Benzeneacetic acid, 2-[(2,6-dichlorophenyl)amino]-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-13-4 |
| 3,5-Pyrazolidinedione, 1,2-diphenyl-4-[2-(phenylsulfinyl)ethyl]-, mixt. with 4-hydroxy-3-(3-oxo-1-phenylbutyl)-2H-1-benzopyran-2-one | Warfarin 81-81-2 | 136153-14-5 |
| 2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, mixt. with 5-[(2-chlorophenyl)methyl]- 4,5,6,7-tetrahydrothieno[3,2-c]pyridine | Warfarin 81-81-2 | 136153-15-6 |