



TOXICS RELEASE INVENTORY

List of Toxic Chemicals within the Warfarin and Salts Category

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) requires certain facilities manufacturing, processing, or otherwise using listed toxic chemicals to report the annual quantity of such chemicals entering each environmental medium. Such facilities must also report pollution prevention and recycling data for such chemicals, pursuant to section 6607 of the Pollution Prevention Act, 42 U.S.C. 13106. EPCRA section 313 is also known as the Toxics Release Inventory (TRI).

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DISCLAIMER

This guidance document is intended to assist industry with EPCRA section 313 reporting for the warfarin and salts category. In addition to providing an overview of aspects of the statutory and regulatory requirements of the EPCRA section 313 program, this document also provides recommendations to assist industry with EPCRA reporting. These recommendations do not supersede any statutory or regulatory requirements, are subject to change, and are not independently binding on either EPA or covered facilities. Additionally, if a conflict exists between guidance on this site and the statutory or regulatory requirements, the conflict must be resolved in favor of the statute or regulation.

Although EPA encourages industry to consider these recommendations, in reviewing this document, industry should be aware that these recommendations were developed to address common circumstances at typical facilities. The circumstances at a specific facility may significantly differ from those contemplated in the development of this document. Thus, individual facilities may find that the recommendations provided in this document are inapplicable to their processes or circumstances, and that alternative approaches or information are more accurate and/or more appropriate for meeting the statutory and regulatory requirements of EPCRA section 313. To that end, industry should use facility specific information and process knowledge, where available, to meet the requirements of EPCRA section 313. EPCRA section 313 also provides that, in the absence of such readily available data, a reporting facility may make reasonable estimates to meet those EPCRA section 313 requirements. Facilities are encouraged to contact the Agency with any additional or clarifying questions about the recommendations in this document, or if the facility believes that EPA has incorrectly characterized a particular process or recommendation.

Additional guidance documents, including industry specific and chemical specific guidance documents, are also available on TRI's GuideME website:

https://ofmpub.epa.gov/apex/guideme_ext/f?p=guideme:gd-list

SECTION 1.0 INTRODUCTION

On November 30, 1994 EPA added nearly 300 chemicals and chemical categories to the list of toxic chemicals subject to reporting under EPCRA section 313, 42 U.S.C 11001. These additions are described at 59 FR 61432, and were effective January 1, 1995 for reports due July 1, 1996. The warfarin and salts category was included in these additions. At the time of the addition, EPA indicated that the Agency would develop, as appropriate, interpretations and guidance that 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.

For general instruction regarding compliance with EPCRA section 313 requirements and form completion, please see the most recent version of the Toxic Chemical Release Inventory Reporting Forms and Instructions, available at: https://ofmpub.epa.gov/apex/guideme_ext/f?p=guideme:rfi-home.

SECTION 2.0 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 2-1: Listing by CAS Number of Each Individual Chemical within the Warfarin and Salts Category

Collective Index Name	Common Name	CAS Number
Warfarin	—	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-(α -acetonylbenzyl)-4-hydroxy-, calcium salt	Warfarin calcium salt	2084-55-1
Coumarin, 3-(α -acetonylbenzyl)-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-1-Benzopyran-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, (\pm)-	(\pm)-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

SECTION 3.0 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 3-1: 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, α -hydro- ω -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 β 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 ¹²	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- α -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
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