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Volume 9

Some Aziridines, *N*-, *S*- & *O*-Mustards and Selenium

Summary of Data Reported and Evaluation

Aziridines

Apholate
Aziridine
2-(1-Aziridinyl)ethanol
Aziridyl benzoquinone
Bis(1-aziridinyl)morpholinophosphine sulfide
2-Methylaziridine
Tris(aziridinyl)-*para*-benzoquinone
Tris(1-aziridinyl)phosphine oxide
2,4,6-Tris(1-aziridinyl)-*s*-triazine
Tris(2-methyl-1-aziridinyl)phosphine oxide

Mustards

Bis(2-chloroethyl)ether
Chlorambucil
Cyclophosphamide
Mannomustine (dihydrochloride)
Melphalan, medphalan and merphalan
Mustard gas
Nitrogen mustard
Nitrogen mustard *N*-oxide (hydrochloride)
Oestradiol mustard
Phenoxybenzamine hydrochloride
Uracil mustard

Selenium and Selenium Compounds

APHOLATE

VOL.: 9 (1975) (p. 31)

CAS No.: 52-46-0

Chem. Abstr. Name: 2,2,4,4,6,6-Hexakis(l-aziridinyI)-2,2,4,4,6,6-hexahydro-1,3,5,2,4,6-triazatriphosphorine

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

In the only available study, apholate was inadequately tested by the oral route in rats; no evaluation on the carcinogenicity of this chemical can be made.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 57: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- APN
- Aziridine, 1,3,5,2,4,6-triazatriphosphorine derivative
- 1-AziridinyIphosphonitrile trimer
- ENT 26,316
- Hexa(l-aziridinyI)-triphosphotriazine
- 2,2,4,4,6,6-Hexakis(l-aziridinyI)cyclotriphosphaza-1,3,5-,triene
- 2,2,4,4,5,5-Hexakis(l-aziridinyI)-2,2,4,4,5,5-hexahydro-1,3,5,2,4,6-triazatriphosphorine
- Hexakis(aziridinyI)-phosphotriazine

Last updated: 21 March 1998

2-(1-AZIRIDINYL)ETHANOL

VOL.: 9 (1975) (p. 47)

CAS No.: 1072-52-2

Chem. Abstr. Name: 1-Aziridineethanol

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

2-(1-Aziridinyl)ethanol is carcinogenic in mice, producing malignant tumours at the site of its subcutaneous injection in the only available study.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 58: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- β -Hydroxy-1-ethylaziridine
- *N*-(β -Hydroxyethyl)aziridine
- *N*-(2-Hydroxyethyl)aziridine
- *N*-(2-Hydroxyethyl)ethylenimine
- 2-(Hydroxyethyl)ethylenimine
- 1-(2-Hydroxyethyl)ethylenimine

AZIRIDYL BENZOQUINONE

VOL.: 9 (1975) (p. 51)

CAS No.: 800-24-8

Chem. Abstr. Name: 2,5-Bis(1-aziridinyl)-3,6-bis(2-methoxyethoxy)-*para*-benzoquinone

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Aziridyl benzoquinone is carcinogenic in mice following its intraperitoneal injection, the only species and route tested, producing an increase in the incidence of lung tumours.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 58: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- A 139
- Bay A 139
- Bayer A 139
- Bayer E 39
- Benzoquinone aziridine
- Bayer E 39 Soluble
- 2,5-Bis(1-aziridinyl)-3,6-bis(2-methoxyethoxy)-2,5-cyclohexadiene-1,4-dione
- 2,5-Bisaziridinyl-3,6-bis-(methoxyethoxy)quinone
- 2,5-Bisaziridinyl-3,6-bis(2-methoxyethoxy)quinone
- 2,5-Bismethoxyethoxy-3,6-bisethyleneimino-1,4-benzoquinone
- 3,6-Bis(β -methoxyethoxy)-2,5-bis(ethylenimino)-*para*-benzoquinone
- E 39 Soluble
- 2,5-Methoxyethoxy-3,6-bis(ethylenimino)-1,4-benzoquinone

BIS(1-AZIRIDINYL)MORPHOLINOPHOSPHINE SULFIDE

VOL.: 9 (1975) (p. 55)

CAS No.: 2168-68-5

Chem. Abstr. Name: 4-[Bis(1-aziridinyl)phosphinothioyl]morpholine

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Bis(1-aziridinyl)morpholinophosphine sulfide is carcinogenic in mice following its intraperitoneal injection, the only species and route tested, producing an increase in the incidence of lung tumours.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 58: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- *N,N'*-Diethylenemorpholinophosphinothioic diamide
- *N,N'*-Diethylene-*N'*-(3-oxapentamethylene)phosphorothioic triamide
- Diethylene oxapentamethylenethiophosphoramide
- Morzid
- Ospa
- *N*-(3-Oxapentamethylene)-*N',N''*-diethylenethiophosphoramide
- Thiomorpholidophosphoric diethylenimide

2-METHYLAZIRIDINE

VOL.: 9 (1975) (p. 61)

CAS No.: 75-55-8

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

2-Methylaziridine is carcinogenic in rats following its oral administration, the only species and route tested, producing a variety of malignant tumours.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: [Vol. 71 \(1999\)](#)

Synonyms

- 2-Methylazacyclopropane
- Methylethylenimine
- Propyleneimine
- 1,2-Propyleneimine
- Propylenimine
- 1,2-Propylenimine

Last updated: 13 April 1999

TRIS(AZIRIDINYL)-*para*-BENZOQUINONE (TRIAZIQUONE)

VOL.: 9 (1975) (p. 67)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Tris(aziridiny)-*para*-benzoquinone is carcinogenic in rats following its intravenous injection and also its intravenous followed by intraperitoneal administration, producing a variety of malignant tumours.

5.2 Human carcinogenicity data

The four available case reports provide insufficient evidence on which to assess the carcinogenicity of this compound.

Subsequent evaluation: [Suppl. 7 \(1987\)](#)

Last updated: 21 March 1998

TRIS(1-AZIRIDINYL)PHOSPHINE OXIDE

VOL.: 9 (1975) (p. 75)

CAS No.: 545-55-1

Chem. Abstr. Name: 1,1',1"-Phosphinylidynetrisaziridine

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Tris(1-aziridinyl)phosphine oxide produced a low incidence of benign and malignant tumours in rats following its oral administration, the only species and route tested. The available data are insufficient for evaluation of the carcinogenicity of this compound.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 73: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- Aphoxide
- APO
- ENT-24915
- Phosphoric acid triethylene imide
- SK-3818
- TEF
- TEPA
- Tēpa
- Triaziridinylphosphine oxide
- *N,N',N''*-Tri-1,2-ethanediylphosphoric triamide
- Triethylenephosphamide
- *N,N',N''*-Triethylenephosphoramide
- Triethylenephosphoric triamide
- *N,N',N''*-Triethylenephosphoric triamide
- Triethylenephosphorotriamide
- Triethylenepyrophosphoramide
- Tris(aziridinyl)phosphine oxide

2,4,6-TRIS(1-AZIRIDINYL)-s-TRIAZINE

VOL.: 9 (1975) (p. 95)

CAS No.: 51-18-3

Chem. Abstr. Name: 2,4,6-Tris(1-aziridinyl)-1,3,5-triazine

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

2,4,6-Tris(1-aziridinyl)-s-triazine is carcinogenic in mice following its intraperitoneal injection, producing an increase in the incidence of ovarian, thymic and lung tumours. It also acted as an initiator of skin carcinogenesis. In rats it produced sarcomas at the site of its subcutaneous injection.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 73: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- ENT 25,296
- M-9500
- Persistol
- Persistol Ho 1/193
- R-246
- SK-1133
- TEM
- TET
- Tretamine
- Triamelin
- 1,1',1''-s-Triazine-2,4,6-triyltrisaziridine
- Triaziridinyl triazine
- Triethanomelamine
- 2,4,6-Triethyleneimino-1,3,5-triazine
- Triethylenelamine
- 2,4,6-Triethylenimino-s-triazine
- 2,4,6-Tris(1'-aziridinyl)-1,3,5-triazine
- 2,4,6-Tris(ethyleneimino)-s-triazine
- Tris(ethyleneimino)triazine
- 2,4,6-Tris(ethylenimino)-s-triazine

BIS(2-CHLOROETHYL)ETHER

VOL.: 9 (1975) (p. 117)

CAS No.: 111-44-4

Chem. Abstr. Name: 1,1'-Oxybis(2-chloro)ethane

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Bis(2-chloroethyl)ether produced an increased incidence of liver-cell tumours in male mice of two strains following its oral administration. Its administration by the subcutaneous route in mice produced a low incidence of sarcomas at the injection site.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: [Vol. 71 \(1999\)](#)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- Bis(chloroethyl)ether
- Bis(β -chloroethyl)ether
- Chlorex
- 1-Chloro-2-(β -chloroethoxy)ethane
- DCEE
- 2,2'-Dichlorodiethyl ether
- β,β' -Dichlorodiethyl ether
- Dichloroether
- Dichloroethyl ether
- 2,2'-Dichloroethyl ether
- β,β' -Dichloroethyl ether
- Di-2-chloroethyl ether
- Di(2-chloroethyl)ether
- Di(β -chloroethyl)ether
- Dichloroethyl oxide
- *sym*-Dichloroethyl ether

CHLORAMBUCIL

VOL.: 9 (1975) (p. 125)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Chlorambucil is carcinogenic in mice and rats following its intraperitoneal injection, producing lymphomas in rats and lymphosarcomas, ovarian tumours and a dose-related increase in the incidence of lung tumours in mice.

5.2 Human carcinogenicity data

The available case reports in which leukaemia and other tumours were reported to have occurred in patients treated with chlorambucil provide insufficient evidence to determine if there is an increased incidence of cancer following the therapeutic use of this drug.

Subsequent evaluation: [Vol. 26 \(1981\)](#); [Suppl. 7 \(1987\)](#)

Last updated: 21 March 1998

CYCLOPHOSPHAMIDE

VOL.: 9 (1975) (p. 135)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Cyclophosphamide is carcinogenic in mice and rats following its intraperitoneal injection, in rats following its intravenous injection and in mice following its subcutaneous injection, in doses similar to those used in clinical practice. It produced mainly lung and lymphoreticular tumours, and also tumours of the liver and reproductive organs, sarcomas and squamous-cell carcinomas of the skin.

5.2 Human carcinogenicity data

The available case reports in which tumours were reported to have occurred in patients treated with cyclophosphamide provide insufficient evidence to determine if there is an increased risk of cancer following the therapeutic use of this drug, with the possible exception of cancer of the bladder.

Subsequent evaluations: [Vol. 26 \(1981\)](#); [Suppl. 7 \(1987\)](#)

Last updated: 21 March 1998

MANNOMUSTINE (DIHYDROCHLORIDE)

VOL.: 9 (1975) (p. 157)

CAS No.: 576-68-1

Chem. Abstr. Name: 1,6-Bis(2-chloroethylamino)-1,6-dideoxy-D-mannitol

CAS No.: 551-74-6

Chem. Abstr. Name: 1,6-Bis(2-chloroethylamino)-1,6-dideoxy-D-mannitol dihydrochloride

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Mannomustine administered as the dihydrochloride is carcinogenic in mice following its intraperitoneal injection, producing an increased incidence of leukaemia and a dose-related increase in the incidence of lung tumours.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 65: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms for Mannomustine (free base)

- 1,6-Bis(chloroethylamino)-1,6-bis-deoxy-D-mannitol
- 1,6-Bis(chloroethylamino)-1,6-bis-deoxy-D-mannite
- 1,6-Bis[(β -chloroethyl)amino]-1,6-dideoxy-D-mannite
- Mannitol mustard
- Mannitol nitrogen mustard

Synonyms for Mannomustine (dihydrochloride)

- BCM
- 1,6-Bis(chloroethylamino)-1,6-dideoxy-D-mannite
- 1,6-Bis(chloroethylamino)-1,6-dideoxy-D-mannite dihydrochloride
- 1,6-Bis(β -chloroethylamino)-1,6-dideoxy-D-mannitol dihydrochloride
- Degranol
- Degranol Chinoin
- 1,6-Di(2-chloroethylamino)-1,6-dideoxy-D-mannitol dihydrochloride
- 1,6-Dideoxy-1,6-di(2-chloroethylamino)-D-mannitol dihydrochloride
- Dimesymannitol
- Mannitol mustard
- Mannitol nitrogen mustard
- Mannogranol
- Mannomustine
- Mannomustine hydrochloride
- NSC 9698

Last updated: 21 March 1998

MELPHALAN, MEDPHALAN AND MERPHALAN

VOL.: 9 (1975) (p. 167)

Melphalan

CAS No.: 148-82-3

Chem. Abstr. Name: 4-[Bis(2-chloroethyl)amino]-L-phenylalanine

Medphalan

CAS No.: 13045-94-8

Chem. Abstr. Name: 4-[Bis(2-chloroethyl)amino]-D-phenylalanine

Merphalan

CAS No.: 531-76-0

Chem. Abstr. Name: 4-[Bis(2-chloroethyl)amino]-DL-phenylalanine

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Melphalan is carcinogenic in mice and rats following its intraperitoneal injection, producing lymphosarcomas and a dose-related increase in lung tumours in mice and peritoneal sarcomas in rats. Merphalan (a mixture of medphalan and melphalan) produced an increased incidence of mammary fibroadenomas in rats following its intraperitoneal injection in single doses.

5.2 Human carcinogenicity data

The available case reports suggest that the incidence of acute leukaemia is increased in myeloma patients treated with melphalan.

Subsequent evaluation: [Suppl. 7 \(1987\) \(Melphalan - Group 1\)](#); [Suppl. 7 \(p. 65\) \(Medphalan - Group 3, Merphalan - Group 2B\)](#)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms for Melphalan

- Alkeran
- L-3-*para*-[Bis(2-chloroethyl)amino]phenyl]alanine
- CB 3025
- *para*-Di(2-chloroethyl)amino-L-phenylalanine
- *para*-Di(2-chloroethyl)aminophenylalanine
- Melfalan
- NSC-88-6
- Phenylalanine mustard
- L-Phenylalanine mustard
- Phenylalanine nitrogen mustard
- Sarcolysin
- L-Sarcolysin
- Sarcolysine
- L-Sarcolysine
- L-Sarkolysin

- SK-15673

Synonyms for Medphalan

- (+)-3-{*para*-[Bis(2-chloroethyl)amino]phenyl}alanine
- D-3-{*para*-[Bis-(2-chloroethyl)amino]phenyl}alanine
- CB-3026
- *para*-Di(2-chloroethyl)amino-D-phenylalanine
- Medfalan
- NSC-35051
- D-Phenylalanine mustard
- D-Sarcolysine

Synonyms for Merphalan

- 3-{*para*-[Bis(2-chloroethyl)amino]phenyl}alanine
- DL-3-{*para*-[Bis-(2-chloroethyl)amino]phenyl}alanine
- CE-3307
- *para*-Di(2-chloroethyl)-DL-phenylalanine
- Merfalan
- NSC-14210
- Phenylalanine mustard
- DL-Phenylalanine mustard
- Sarcoclorin
- Sarcolysin
- DL-Sarcolysin
- Sarcolysine
- DL-Sarcolysine

MUSTARD GAS

VOL.: 9 (1975) (p. 181)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Mustard gas is carcinogenic in mice, the only species tested, following their exposure to its vapours or following its intravenous injection, inducing an increase in the incidence of lung tumours. Following its subcutaneous injection in mice, it produced a low incidence of sarcomas at the site of injection.

5.2 Human carcinogenicity data

There is evidence of an increased incidence of cancers of the respiratory tract in men exposed to mustard gas.

Subsequent evaluation: [Suppl. 7 \(1987\)](#)

Last updated: 21 March 1998

NITROGEN MUSTARD (HYDROCHLORIDE)

VOL.: 9 (1975) (p. 193)

CAS No.: 51-75-2

Chem. Abstr. Name: 2-Chloro-*N*-(2-chloroethyl)-*N*-methylethanamine

CAS No.: 55-86-7

Chem. Abstr. Name: 2-Chloro-*N*-(2-chloroethyl)-*N*-methylethanamine hydrochloride

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Nitrogen mustard, administered mainly as the hydrochloride, is carcinogenic in mice and rats. Following its subcutaneous, intraperitoneal or intravenous injection, it produced an increased incidence of lung tumours and thymic lymphomas in mice; it produced a variety of malignant tumours in rats following its intravenous injection.

5.2 Human carcinogenicity data

No case reports or epidemiological studies referring to exposures to nitrogen mustard alone were available to the Working Group.

Subsequent evaluation: [Suppl. 7 \(1987\) \(Nitrogen mustard\)](#)

Synonyms for Nitrogen mustard

- *N,N*-Bis(2-chloroethyl)-*N*-methylamine
- *N,N*-Bis(2-chloroethyl)methylamine
- Bis(2-chloroethyl)methylamine
- Bis(β -chloroethyl)methylamine
- Caryolysin
- Chloramine
- Chlormethine
- Cloramin
- β,β' -Dichlorodiethyl-*N*-methylamine
- Di(2-chloroethyl)methylamine
- β,β' -Dichloro-*N*-methyldiethylamine
- Embichin
- HN2
- MBA
- Mechlorethamine
- *N*-Methyl-bis(2-chloroethyl)amine
- *N*-Methyl-bis(β -chloroethyl)amine
- Methylbis(β -chloroethyl)amine
- Methylbis(chloroethylamine)
- *N*-Methyl-2,2'-dichlorodiethylamine
- Methyldi(2-chloroethyl)amine
- Mustargen
- Mustine
- Mutagen
- Nitrogen mustard

Synonyms for Nitrogen mustard hydrochloride

- Azotoperite
- *N,N*-Bis(2-chloroethyl)methylamine hydrochloride
- Bis(2-chloroethyl)methylamine hydrochloride
- Caryolysine
- Chloramin
- Chloramine
- Chlorethamine
- Chlorethazine
- Dichloren
- β_1 -Dichlorodiethyl-*N*-methylamine hydrochloride
- Di(2-chloroethyl)methylamine hydrochloride
- Di(chloroethyl)methylamine chloride
- β, β' -Dichloro-*N*-methyl-diethylamine hydrochloride
- Dimitan
- Embichin
- Embikhine
- Erasol
- HN2
- HN2 hydrochloride
- MBA hydrochloride
- Mebichloramine
- Mechlorethamine
- Mechlorethamine hydrochloride
- Metagen
- *N*-Methylbis(2-chloroethyl)amine hydrochloride
- Methylbis(2-chloroethyl)amine hydrochloride
- *N*-Methylbis(β -chloroethyl)amine hydrochloride
- Methylbis(β -chloroethyl)amine hydrochloride
- *N*-Methyl-2,2'-dichlorodiethylamin hydrochloride
- Methyldi(2-chloroethyl)amine hydrochloride
- Methyldi(β -chloroethyl)amine hydrochloride
- Mitoxine
- Mustargen
- Mustargen hydrochloride
- Mustine
- Mustine Hydrochlor
- Mustine hydrochloride
- Nitrogen mustard
- Nitrogranulogen
- N-Lost
- NSC-762 hydrochloride

NITROGEN MUSTARD *N*-OXIDE (HYDROCHLORIDE)

VOL.: 9 (1975) (p. 209)

CAS No.: 126-85-2

Chem. Abstr. Name: 2-Chloro-*N*-(2-chloroethyl)-*N*-methylethanamine-*N*-oxide

CAS No.: 302-70-5

Chem. Abstr. Name: 2-Chloro-*N*-(2-chloroethyl)-*N*-methylethanamine-*N*-oxide hydrochloride

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Nitrogen mustard *N*-oxide hydrochloride is carcinogenic in mice and rats. Following its subcutaneous injection in mice, it produced lung tumours, thymic lymphomas and Harderian gland adenomas; following its intravenous injection in rats it produced mainly lymphoreticular tumours and sarcomas.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (1987) (p. 67: **Group 2B**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms for Nitrogen mustard *N*-oxide

- 2,2'-Dichloro-*N*-methyldiethylamine-*N*-oxide
- HN2 oxide mustard
- MBAO
- Mechlorethamine oxide
- Methylbis(β -chloroethyl)amine-*N*-oxide
- Nitrogen mustard amine oxide
- Nitrogen mustard oxide
- Nitrogen mustard *N*-oxide
- NMO
- Oxy-NH₂

Synonyms for Nitrogen mustard *N*-oxide (hydrochloride)

- 2,2'-Dichloro-*N*-methyldiethylamine *N*-oxide hydrochloride
- Mechlorethamine oxide hydrochloride
- Methylbis(2-chloroethyl)amine *N*-oxide hydrochloride
- Methylbis(β -chloroethyl)amine *N*-oxide hydrochloride
- *N*-Methylbis(β -chloroethyl)amine *N*-oxide hydrochloride
- *N*-Methyl-2,2'-dichlorodiethylamine *N*-oxide hydrochloride
- Methyldi(2-chloroethyl)amine *N*-oxide hydrochloride
- Mitomen
- Mustron
- Nitrogen mustard oxide
- Nitrogen mustard *N*-oxide

- Nitrogen mustard *N*-oxide hydrochloride
- Nitromin
- Nitromin hydrochloride
- *N*-Oxide-Lost
- NSC-10107
- SK-598

Last updated: 21 March 1998

OESTRADIOL MUSTARD

VOL.: 9 (1975) (p. 217)

CAS No.: 22966-79-6

Chem. Abstr. Name: Estra-1,3,5(10)-triene-3,17 β -diol,bis({*para*-[bis-(2-chloroethyl)-amino]phenyl}acetate)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Oestradiol mustard is carcinogenic in mice following its intraperitoneal injection, the only species and route tested, producing a dose-related increase in the incidence of lung tumours.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: Suppl. 7 (p. 68: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Synonyms

- Bis{(4-[bis(2-chloroethyl)amino]benzene)acetate)estra-1,3,5(10)-triene-3,17-diol(17 β)}
- Bis{(4-[bis(2-chloroethyl)amino]benzene)acetate)oestra-1,3,5(10)-triene-3,17-diol(17 β)}
- Bis({*para*[bis(2-chloroethyl)amino]phenyl}acetate)estradiol
- Bis({*para*[bis(2-chloroethyl)amino]phenyl}acetate)estra-1,3,5(10)-triene-3,17 β -diol
- Bis{[*para*[bis(2-chloroethyl)amino]phenyl}acetate)oestra-1,3,5(10)-triene-3,17 β -diol
- Bis{[*para*[bis(2-chloroethyl)-phenyl]acetate)oestradiol
- NSC 112259

Last updated: 21 March 1998

PHENOXYBENZAMINE (HYDROCHLORIDE)

VOL.: 9 (1975) (p. 223)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Phenoxybenzamine is carcinogenic in mice following its intraperitoneal injection, the only species and route tested, producing an increased incidence of lung tumours.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: [Vol. 24 \(1980\)](#); Suppl. 7 (1987) (p. 70: **Group 2B**)

For definition of Groups, see [Preamble Evaluation](#).

Last updated: 21 March 1998

URACIL MUSTARD

VOL.: 9 (1975) (p. 235)

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Uracil mustard is carcinogenic in mice and rats following its intraperitoneal injection, producing a dose-related increase in the incidence of lung tumours in mice with a variety of tumours in both mice and rats.

5.2 Human carcinogenicity data

No case reports or epidemiological studies were available to the Working Group.

Subsequent evaluation: [Suppl. 7 \(1987\)](#)

Last updated: 21 March 1998

SELENIUM AND SELENIUM COMPOUNDS

VOL.: 9 (1975) (p. 245)

CAS No.: 7782-49-2

5. Summary of Data Reported and Evaluation

5.1 Animal carcinogenicity data

Selenium compounds were tested in mice and rats by the oral route. Although in one experiment in rats selenium produced an increase in the incidence of liver tumours, the available data are insufficient to allow an evaluation of the carcinogenicity of selenium compounds.

5.2 Human carcinogenicity data

The available data provide no suggestion that selenium is carcinogenic in man, and the evidence for a negative correlation between regional cancer death rates and selenium is not convincing.

Subsequent evaluation: Suppl. 7 (1987) (p. 71: **Group 3**)

For definition of Groups, see [Preamble Evaluation](#).

Last updated: 21 March 1998