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表1. 抗菌防霉剤原体事典(文獻15)収録物質と細胞毒性試験実施物質

分類	名称	別名など	細胞毒性試験
アミン	Bis(3-aminopropyl)dodecylamim	トリアルキルトリアミン	
アルコール	Ethyl alcohol Iso-propyl alcohol Propyl alcohol Tris(hydroxymethyl)nitromethane 1,1,1-Trichloro-2-methyl-2-propanol 2-Bromo-2-nitropropane-1,3-diol	エチルアルコール, エタノール イソプロパノール プロピルアルコール, プロパノール トリスニトロ クロロブタノール ブロボール, ブロノール, ブロノコト	○
アルデヒド	1,5-Pentanedial Formaldehyde α-Bromocinnamic aldehyde	グルタルアルデヒド ホルムアルデヒド α-ブロムシナムアルデヒド	
インチアゾリン	2-n-Octyl-4-isothiazolin-3-one 5-Chloro-2-methyl-4-isothiazolin-3-one/2-Methyl-4-isothiazolin-3-one 1,2-Benzisothiazolone-3 N-n-Butyl-1,2-benzisothiazolone-3	スケーンM-8 ケーソンCG, NS-500W BIT n-ブチルBIT	○ ○
インチオシアネート	Allyl isothiocyanate	アリールインチオシアネート, インチオシアン酸アリル	
イミダゾール	2-(4-Thiazolyl)-benzimidazol Methy-2-benzimidazole carbamate	チアベンダゾール, TBZ 2-ベンツイミダゾリルカルバミン酸メチル, プリベントールBCM	○
エステル	Glycerol laurate	ラウリシジン, グリセルモノラウレート, モノグリセリド	
オキサゾリジン	4,4-Dimethyl-1,3-oxazolidine 3,4,4'-Trichlorocarbanilide 4,4'-Dichloro-3-(3-fluoromethyl)-carbanilide	バイオバンCS-1135, オキサジンA トリクロカルバン, トリクロカルバニリド ハロカルバン, クロフルカルバン	○ ○
カーバメート	3-Iodo-2-propynylbutylcarbamate	グライシカル	○
カルボン酸	Benzoic acid Hexa-2,4-dienoic acid Octanoic acid Propionic acid Undecylenic acid Potassium hexa-2,4-dienoic acid Potassium propionate Calcium propionate Sodium benzoate	安息香酸, ベンゼンカルボン酸 ソルビン酸, 2-プロペニルアクリル酸 カプリル酸 プロピオン酸 10-ウンデシレン酸, 10-ウンデセン酸 ソルビン酸カリウム, 2-プロペニルアクリル酸カリウム プロピオン酸カリウム プロピオン酸カルシウム 安息香酸ナトリウム	

表1. 続き(1)

分類	名称	別名など	細胞毒性試験
カルボン酸	Sodium propionate Magnesate(2-),bis(2-carboxybenzene carboperoxato)dihydrogene Zinc undecylenate	プロピオン酸ナトリウム フタル酸モノマグネシウム ウンデシレン酸亜鉛	
キノリン	8-Hydroxyquinoline Bis(quinolin-8-olato)copper	8-ヒドロキシキノリン キノリン銅, オキシ銅, 8-キノリノール銅	
サルファイド ジフェニルエーテル	Bis(dimethylthiocarbonyl)disulfide 2,4,4'-Trichloro-2'-hydroxydiphenyl	TMTD, チウラム トリクロサン, イルガサンDP300	
スルファミド	N,N-Dimethyl-N'-(fluorodichloromethylthio)-N"-phenylsulfamide N-Dichlorofluoromethylthio-N',N"-dimethyl-N-p-torylsulfamide	ジクロフルアニド, プリベントールA4-S トリフルアニド, プリベントールA5	○
タンパク質	Protaine Hen egg lysozyme	しらこタンパク, しらこ分解物, 核タンパク 卵白リゾチーム	
チアゾール チオカーバメート	2-(4-Thiocyanomethylthio)benzothiazol Sodium N-methylthiocarbonate	ベンチアゾール N-メチルジチオカルバミン酸ナトリウム, カーバムナトリウム	○
トリアジン	Hexahydro-1,3,5-tris(hydroxyethyl)-S-triadine CAVINON (100,200) α-[2-(4-Chlorophenyl)ethyl]-α-(1,1-dimethylethyl)-1H-1,2,4-triazole-1-ethanol	バイオバンGK, トリアジン カビン(100,200) デブコナゾール	
トロポロン	4-Isopropyl-2-hydroxy-cyclohepta-2,4,6-triene-1-one	ヒノキチオール, β-ツヤプリシン	○
ニトリル	2,4,5,6-Tetrachloroisophthalonitrile 1,2-Dibromo-2,4-dicyanobutane	テトラクロロイソフタロニトリル テクタマール38	○
ビグアナイド	1,1'-Hexamethylene bis[5-(4-chlorophenyl)biguanide] digluconate Bis(p-chlorophenyldiguanide)hexane dihydrochloride Poly(hexamethylene biguanide) Poly(hexamethylene biguanide)hydrochloride	グルコン酸クロルヘキシジン クロルヘキシジン塩酸塩 ポリヘキサメチレンビグアナイド ポリビグアナイド塩酸塩	
ヒダントイン	1-Bromo-3-chloro-5,5'-dimethyl hydantoin 1,3-Bis-(hydroxymethyl)-5,5'-dimethylhydantoin	ダントブロム グライダント, ダントガード	
ピリジン	Sodium pyridine thiol-1-oxide Zinc bis(2-pyridylthio-1-oxide) 2,3,5,6-Tetrachloro-4-(methylsulphonyl)pyridine Copper bis(2-pyridylthio-1-oxide)	ピリチオンナトリウム ジンクピリチオン, ジンクオマジン, ZPT デンシル 銅ピリチオン, カッパーオマジン, CuPT	○ ○

表1. 続き(2)

分類	名称	別名など	細胞毒性試験
フェノール	2-Iso-propyl-5-methylphenol 3-Methyl-4-iso-propylphenol o-Phenylphenol Phenol Butyl-p-hydroxybenzoate	チモール, 2-イソプロピル-5-メチルフェノール イソプロピルメチルフェノール, ビオゾール OPP, オルトフェニルフェノール フェノール, 石炭酸 ブチルパラベン	



表2. 細胞毒性試験を行った化学物質名とその結果

分類	化学物質	防衛防衛事典における名称	本研究で用いた名称	略号	CAS番号
アルコール	2-Bromo-2-nitropropane-1,3-diol		2-Bromo-2-nitropropane-1,3-diol	BNPD	52-51-7
イソチアゾリン	1,2-Benzisothiazolone-3		1,2-Benzisothiazolone-3-one	BIT	2634-33-5
イソチアゾリン	N-n-Butyl-1,2-benzisothiazolone-3		N-n-Butyl-1,2-benzisothiazolone-3-one	BBIT	4299-07-4
イミダゾール	Methy-2-benzimidazole carbamate		Methyl-N-(2-benzimidazolyl)carbamate	MBIC	10605-21-7
オキサゾリジン	4,4-Dimethyl-1,3-oxazolidine		4,4'-Dimethyl-1,3-oxazoline	DMO	51200-87-4
オキサゾリジン	3,4,4'-Trichlorocarbanilide		3,4,4'-Trichlorocarbanilide	TCC	13208-22-5
カーバメート	3-Iodo-2-propynylbutylcarbamate		3-Iodo-2-propynylbutylcarbamate	IPBC	55406-53-6
スルファミド	N,N-Dimethyl-N'-(fluorodichloromethylthio)-N"-phenylsulfamide		N-Dimethyl-N'-phenyl-N''-(fluorodichloromethylthio)sulfamide	DMPFS	1085-98-9
チアゾール	2-(4-Thiocyanomethylthio)benzothiazol		2-(Thiocyanomethylthio)benzothiazole	TCMTBT	21564-17-0
トロピロン	4-Isopropyl-2-hydroxy-cyclohepta-2,4,6-triene-1-one		2-Hydroxy-4-isopropyl-2,4,6-cycloheptatrien-1-one	HICHO	499-44-5
ニトリル	2,4,5,6-Tetrachloroisophthalonitrile		2,4,5,6-Tetrachloroisophthalonitrile	TPN	1897-45-6
ピリジン	Zinc bis(2-pyridylthio-1-oxide)		Zinc bis(2-pyridylthio-1-oxide)	ZPT	13463-41-7
ピリジン	2,3,5,6-Tetrachloro-4-(methylsulphonyl)pyridine		2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine	TCMSP	13108-52-6
フェノール	4-Chloro-3,5-dimethylphenol		4-Chloro-3,5-dimethylphenol (p-Chloro-m-xylenol)	PCMX	88-04-0
フェノール	2-Methyl-3-chlorophenol		4-Chloro-3-methylphenol (p-Chloro-m-cresol)	PCMC	59-50-7
フタルイミド	N-(Fluorodichloromethylthio)-phthalimide		N-(Fluorodichloromethylthio)phthalimide	FPI	719-96-0
ヨウ素	p-Chlorophenyl-3-iodopropargyl formal		p-Chlorophenyl-3-iodopropargylformal	CPIP	29772-02-9
ヨウ素	3-Bromo-2,3-diiodo-2-propenylethylcarbonate		1-Bromo-3-ethoxycarbonyl-1,2-diiodo-1-propene	BECDIP	77352-88-6
第四アンモニウム	4,4'-(Tetramethylenedicarbonyl)bis(1-decylpyridinium bromide)		4,4'-Tetramethylene-bis(4-carbamoyl-1-decylpyridinium bromide)	TMBCDIPB	Unknown
第四アンモニウム	N,N'-Hexamethylenebis(4-carbamoyl-1-decylpyridinium bromide)		N,N'-Hexamethylenebis(4-carbamoyl-1-decylpyridinium bromide)	HMBCDIPB	Unknown
	記載なし		2-Chloroacetamide	CAA	79-07-2
	記載なし		Isobornyl thiocyanacetate	IBTA	115-31-1
	記載なし		10,10'-Oxy-bis(phenoxyarsine)	OBPA	58-36-6
	記載なし		Hiba oil	HO	Unknown

表 3. Biocidal product-types (殺菌剤の用途)

Main group 1: Disinfectants and general biocidal products (消毒剤と一般殺菌剤)

Product-type 1 (RP01): Human hygiene biocidal products (ヒト用衛生殺菌剤)

Product-type 2 (PT02): Private area and public health area disinfectants and other biocidal products (個人及び公衆衛生用の消毒剤及び他の殺菌剤)

Product-type 3 (PT03): Veterinary hygiene biocidal products (動物用衛生殺菌剤)

Product-type 4 (PT04): Food and feed area disinfectants (食物及び飼料用の消毒剤)

Product-type 5 (PT05): Drinking water disinfectants (飲料水消毒剤)

Main group 2: Preservatives (防腐剤)

Product-type 6 (PT06): In-can preservatives (缶内部防腐剤)

Product-type 7 (PT07): Film preservatives (フィルム防腐剤)

Product-type 8 (PT08): Wood preservatives (木材防腐剤)

Product-type 9 (PT09): Fibre, leather, rubber and polymerised materials preservatives (繊維皮革、ゴム、重合材料防腐剤)

Product-type 10 (PT10): Masonry preservatives (石材防腐剤)

Product-type 11 (PT11): Preservatives for liquid-cooling and processing systems (液体冷却処理装置用防腐剤)

Product-type 12 (PT12): Slimicides (スライム(粘性細菌)防止剤)

Product-type 13 (PT13): Metalworking fluid preservatives (金属加工油防腐剤)

Main group 3: Pest control (有害生物、害虫制御剤)

Product-type 14 (PT14): Rodenticides (殺鼠剤)

Product-type 15 (PT15): Avicides (殺鳥剤)

Product-type 16 (PT16): Molluscicides (軟体動物(特にナメクジ)駆除剤)

Product-type 17 (PT17): Piscicides (殺魚剤)

Product-type 18 (PT18): Insecticides, acaricides and products to control other arthropods (殺虫剤、殺ダニ剤及び他の節足動物駆除剤)

Product-type 19 (PT19): Repellents and attractants (忌避剤、防虫剤及び誘引薬)

Main group 4: Other biocidal products (その他の殺菌剤)

Product-type 20 (PT20): Preservatives for food or feedstocks (食料及び原材料の防腐剤)

Product-type 21 (PT21): Antifouling products (防汚剤)

Product-type 22 (PT22): Embalming and taxidermist fluids (防腐保蔵剤と剥製保存剤)

Product-type 23 (PT23): Control of other vertebrates (その他の脊椎動物の制御)









表5. 欧州既存活性物質分類表(文献5)に基づいて行なった試験物質の分類

Test chemical name	Abbreviation	CAS number	Name (EINECS and/or others)	EC number
既存活性物質(付属書 I に記載) 再調査計画に入った既存活性物質(付属書 III に記載)				
2-Bromo-2-nitropropane-1,3-diol	BNPD	52-51-7	Bromopol	200-143-0
10,10'-Oxy-bis(phenoxarsine)	OBPA	58-36-6	Diphenoxarsin-10-yl oxide	200-377-3
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	PCMC	59-50-7	Chlorocresol	200-431-6
2-Chloroacetamide	CAA	79-07-2	2-Chloroacetamide	201-174-2
4-Chloro-3,5-dimethylphenol (p-Chloro-m-xylene)	PCMX	88-04-0	Chloroxylenol	201-793-8
2-Hydroxy-4-isopropyl-2,4,6-cycloheptatrien-1-one	HICHO	499-44-5	2-hydroxy-4-isopropyl-2,4,6-cycloheptatrien-1-one	207-880-7
N-Dimethyl-N'-phenyl-N'-(fluorodichloromethylthio)sulfamide	DMFFS	1085-98-9	Dichlofluamid	214-118-7
2,4,5,6-Tetrachloroisophthalonitrile	TPN	1897-45-6	Chlorothalonil	217-588-1
1,2-Benzisothiazolin-3-one	BIT	2634-33-5	1,2-benzisothiazol-3(2H)-one	220-120-9
Methyl-N-(2-benzimidazolyl)carbamate	MBIC	10605-21-7	Carbendazim	234-232-0
Zinc bis(2-pyridylthio-1-oxide)	ZPT	13463-41-7	Pyriithione zinc	236-671-3
2-(Thiocyanomethylthio)benzothiazole	TCMTBT	21564-17-0	(benzothiazol-2-ylthio)methyl thiocyanate	244-445-0
4,4'-Dimethyl-1,3-oxazoline	DMO	51200-87-4	4,4-dimethyloxazolidine	257-048-2
3-Iodo-2-propynylbutylcarbamate	IPBC	55406-53-6	3-iodo-2-propynyl butylcarbamate	259-627-5
既存活性物質のうち、再調査計画への届け出がなかった、または、 いずれの国も重要性を示さなかった物質(付属書 III に記載)				
Isobornyl thiocanoacetate	IBTA	115-31-1	1,7,7-trimethylbicyclo[2.2.1]hept-2-yl thiocyanatoacetate	204-081-5
N-(Fluorodichloromethylthio)phthalimide	FPI	719-96-0	N-[(dichlorofluoromethyl)thio]phthalimide	211-952-3
2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine	TCMSP	13108-52-6	2,3,5,6-tetrachloro-4-(methylsulphonyl)pyridine	236-035-5
非既存活性物質(付属書 I に記載なし)				
N-n-Butyl-1,2-benzisothiazolin-3-one	BBIT	4299-07-4		
3,4,4'-Trichlorocarbanilide	TCC	13208-22-5		
p-Chlorophenyl-3-iodopropargylformal	CPIP	29772-02-9		
1-Bromo-3-ethoxycarbonyl-1,2-diiodo-1-propene	BECDIP	77352-88-6		
4,4'-Tetramethylene-bis(4-carbomoyl-1-decylpyridinium bromide)	TMBCDPPB	Unknown		
N,N'-Hexamethylenebis(4-carbamoyl-1-decylpyridinium bromide)	HMBCDPPB	Unknown		
Hiba oil	HO	Unknown		

Annex I: Existing active substances

Annex II: Existing active substances and product types included in the review programme

Annex III: Existing active substances that have been identified but in respect of which no notification has been accepted or no member state has indicated an interest

表 6. HSDB(文献 7)に分析法の記載のある抗菌剤とその分析法

**Methyl-N-(2-benzimidazolyl)carbamate (CAS No. 10605-21-7)**

1. EPA Method 631

matrix: municipal and industrial wastewater

procedure: high-performance liquid chromatography (HPLC); method detection limit: 8.7 µg/l.

U.S. Environmental Protection Agency. EPA Methods and Guidance for Analysis of Water. CD-ROM, Version 2.0 (ISO 9660-2, V393EPAW). Solutions Software Corp (1999)

2. Standard Method for the Examination of Water and Wastewater: Method 6610

matrix: natural ground and surface waters

procedure: HPLC

American Public Health Association, American Water Works Association, Water Environment Federation. Standard Methods for the Examination of Water and Wastewater 20th ed. (1999). CD-ROM

3. Method 8321A

matrix: wastewater, ground water, and soil/sediment matrices

procedure: HPLC/thermospray/mass spectrometry or ultraviolet detection; method detection limit: 0.4 µg/l.

U.S. Environmental Protection Agency. Solid Waste Test Methods SW-846 with Update III. CD-ROM (ISO 9660, V381SW8). Solutions Software Corp (1998)

**N-Dimethyl-N'-phenyl-N'-(fluorodichloromethylthio)sulfamide (CAS No. 1085-98-9)**

1. Tsuge S. et al.; NOYAKU KENSASHO HOKOKU (BULL AGR CHEM INSP STN) 14: 19-20 (1974).

in formulations by GLC.

2. Bezkravnaka EV. et al.; KHIM SELSK KHOZ 12: (9) 603-4 (1974)

in strawberries and grapes. Limit of Thin-layer chromatography (TLC) sensitivity is 0.02 mg/kg for euparen and 0.06 mg/kg for its metabolite.

3. Tomlin, C.D.S. (ed.). The Pesticide Manual - World Compendium. 10th ed. Surrey, UK: The

British Crop Protection Council, 1994. 302

Product analysis by HPLC or by reaction with sodium methoxide and, ultimately, titration of the chloride. Residues determined by GLC.

4. FDA Method 242.1.

Organonitrogen Residues General Method for Nonfatty Foods Including Acetone Extraction and Isolation in Organic Phase. Analysis by GC/ECD.

USEPA; EMMI. Environmental Monitoring Methods Index. Version 2.0. NTIS PB-95-502415 (1995)

**2-(Thiocyanomethylthio)benzothiazole (CAS No. 21564-17-0)**

1. Daniels CR, Swan EP; J Chromatogr Sci 25 (1): 43-5 (1987)

on the surface of lumber

HPLC; the calibration curve is linear over the range 0.05-300 µg.

2. EMSLC Method 637

in Industrial and Municipal Wastewaters by Liquid Chromatography. Detection limit = 1000 µg/l.

USEPA; EMMI. EPA's Environmental Monitoring Methods Index. Version 1.1. PC# 4082. Rockville, MD: Government Institutes (1997)

**2,4,5,6-Tetrachloroisophthalonitrile (CAS No. 1897-45-6)**

1. Spencer, E. Y. Guide to the Chemicals Used in Crop Protection. 7th ed. Publication 1093.

Research Institute, Agriculture Canada, Ottawa, Canada: Information Canada, 1982. 118

Phosphorimetry

2. Stan HJ; J Chromatogr 467 (1): 85-98 (1989)

for pesticide residue analysis of 76 pesticides

The mass selective detector HP MSD; capillary column; selected ion monitoring mode;

retention time 19.16 min.

3. IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva:

World Health Organization, International Agency for Research on Cancer, 1972-PRESENT.

(Multivolume work).p. V30 322 (1983)

in garden fruits and vegetables surfaces

GC with electron capture detection. The minimum detection limit was 0.01 mg/kg.

3. EPA Method 606

in municipal and industrial discharges

GC with electron capture detector (ECD); detection limit 0.001 µg/l.

4. Worthing, C.R. and S.B. Walker (eds.). The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 171

Product analysis is by gas liquid chromatography . Residues may be determined by gas liquid chromatography.

#### **Zinc bis(2-pyridylthio-1-oxide) (CAS No. 13463-41-7)**

1. Wilson CH; DETERMINATION OF PRESERVATIVES IN COSMETICS; NEWBURGER'S MAN COSMET ANAL 2ND ED: 105 (1977)

Two spectrophotometric methods in cosmetics

2. Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 2740

to air samples

Ultraviolet & infrared spectrophotometry, polarography; consist of oxidizing the mercapto group with iodine.

ZINC OMADINE & SODIUM OMADINE TECHNICAL BULLETIN, NUMBER AD 1372-973, OLIN CORPORATION, STAMFORD, CONN.

3. Seymour MD, Bailey DL; Thin-layer chromatography of pyrithiones; J Chromatogr 206(2) 301 (1981)

on silica gel GF by TLC.

4. Kabacoff BL, Fairchild CM; Determination of zinc pyrithione by chelate exchange; J Soc Cosmet Chem 26(9) 453 (1975)

#### **4-Chloro-3-methylphenol (p-Chloro-m-cresol) (CAS No. 59-50-7)**

##### Analytical Laboratory Methods:

1. Rhoades JW, Nulton CP; J Environ Health part A Environ Sci Eng 15 (5): 467-84 (1980)  
Pollutant volatile phenols in wastewater by microextraction
2. Sattar MA et al; J Chromatogr 136 (3): 379-84 (1977)  
TLC; separation on silicagel-dichloromethane
3. Golden JB et al; COLLOQ POLLUT PROT EAUX REG RHONE-ALPES (CR) 2ND 1: 297-301 (1975)  
in effluents/ ECD-GC; column of 10% DC 550 on chromosorb W AW 80-100.
4. Realini PA; J Chromatogr Sci 19 (3): 124-36 (1981)  
ng/l in water  
HPLC; MicroPak 5 nm C18 column; acetic acid/water/acetonitrile eluent; confirm by Dual UV detection
5. Buckman NG et al; J Chromatogr 284 (2): 441-46 (1984)  
in environmental samples, including the priority pollutants/ HPLC
6. Lee HB, Chau AS; J Assoc Off Anal Chem 66 (4): 1029-38 (1983)  
ECD-GC; detection limits using fused silica capillary columns of all chloro-, alkyl- and mononitro-phenols are between 0.5 and 5 pg.
7. Harvey HE, Chell RM; Aust J Pharm Sci 10 (Dec): 115-7 (1981)  
in injectable formulations/ HPLC, ammonium acetate:acetonitrile as the mobile phase
8. Giabbai M et al; Anal Chem Symp Ser 13 (Chromatogr Biochem, Med Environ Res): 41-52 (1983)  
in municipal wastewater & sludge samples in trace amounts  
High-resolution GC with selective detectors
9. Eichelberger JW et al; Anal Chem 55 (9): 1471-9 (1983)  
in water/ capillary column chromatography/ GC/MS methods use different pH conditions for the liquid-liquid extractions with methylene chloride.

10. Aakerblom M, Lindgren B; J Chromatogr 258: 302-6 (1983)

HPLC; UV (280 nm)-Electrochemical detection (ECD)

11. Armentrout DN et al; Anal Chem 51 (7): 1039-45 (1979)

1 ppb in water/ HPLC-ECD

12. Renberg L; Chemosphere 10 (7): 767-73 (1981)

in industrial wastewater/ GC

13. Buisson R SK et al; J Chromatogr Sci 22 (8): 339-42 (1984)

in aqueous samples at ng/l concentration.

Derivatization was carried out for capillary GC/electron capture detection by extractive alkylation with pentafluorobenzoyl chloride.

14. Mangani F et al; Anal Chem 58 (14): 3261-63 (1986)

GC; column develop.

15. Method: EPA-EAD 604

in water/ GC-Electron Capture Detector/Flame Ionization Detector; Detection Level 0.36 µg/L.

National Environmental Methods Index; Analytical, Test and Sampling Methods. Available from [http://infotrek.er.usgs.gov/servlet/page?\\_pageid=202,204,1160&\\_dad=portal30&\\_schema=PORTAL](http://infotrek.er.usgs.gov/servlet/page?_pageid=202,204,1160&_dad=portal30&_schema=PORTAL) 30 on 3-Methyl-4-chlorophenol (59-50-7) as of March 31, 2003

16. Method: EPA-NERL 528

in drinking water/ Solid Phase Extraction and Capillary Column GC/MS; Detection Level 0.036 µg/L.

17. Method: EPA-EAD 1625

water/ Isotope Dilution GC/MS; Detection Level 10 µg/L.

18. Method: EPA-NERL 625

water/ GC/MS; Detection Level 3 µg/L.

19. Method: Standard Method 6410B

water/ Liquid-Liquid Extraction GC/MS; Detection Level 3 µg/L.

20. Method: Standard Method 6420B

water/ Liquid-Liquid Extraction GC Method; Detection Level: 0.36 µg/L.

21. Method: EPA-OSW 8041A

aqueous and non-aqueous samples/ Capillary GC/Flame Ionization Detector or GC/Electron Capture Detector and Single or Dual Columns

22. Method: EPA-OSW 8270D

solid waste matrices, soils, air sampling media and water samples/ GC/MS

23. Method: DOE OM100R

multimedia samples/ Capillary Column Ion Trap MS; Detection Level: 41 µg/L.

Clinical Laboratory Methods:

1. Lores EM et al; J Chromatogr Sci 19 (9): 466 (1981)

in human urine samples at ppb/ GC & HPLC-ECD

2. Farrington DS, Munday JW; Analyst (London) 101: 639-43 (1976)

in chicken flesh/ GC

**Isobornyl thiocyanacetate (CAS No. 115-31-1)**

1. Martin, H. and C.R. Worthing (eds.). Pesticide Manual. 5th ed. Worcestershire, England: British Crop Protection Council, 1977. 309

Color change

2. Association of Official Analytical Chemists. Official Methods of Analysis. 10th ed. and supplements. Washington, DC: Association of Official Analytical Chemists, 1965. New editions through 13th ed. plus supplements, 1982.p. 13/120 6.423

in livestock or fly spray/ titrimetric procedure

表7. 家庭用品に対する分析例

Chemical name	CAS No.	分析法	対象品目	検出例	用途例*
2-Bromo-2-nitropropane-1,3-diol	52-51-7	GC	切削油、化粧品	×	用廃水、冷却水、繊維、皮革、紙パルプ、化粧品
1,2-Benzisothiazolin-3-one	2634-33-5	GC	壁紙用接着剤	×	水系製品全般の防霉、塗料、金属
N-n-Butyl-1,2-benzisothiazolin-3-one	4299-07-4				プラスチック、塗料、金属加工油
Methyl-N-(2-benzimidazolyl)carbamate	10605-21-7				塗料、プラスチック、木材、シーリング材
4,4'-Dimethyl-1,3-oxazoline	51200-87-4	GC	切削油	○	金属加工油、塗料、エマルジョン、化粧品
3,4,4'-Trichlorocarbanilide	13208-22-5	HPLC	繊維製品、化粧品	○	化粧品、繊維製品、消毒剤
3-Iodo-2-propynylbutylcarbamate	55406-53-6	GC	防カビ剤	○	木材、プラスチック、用廃水、医用光学機器、食品工業、医環境、環境
N-Dimethyl-N'-phenyl-N'-(fluorodichloromethylthio)sulfamide	1085-98-9	GC	塗料	○	非水系塗料、木材、ブルーステイン防止剤、プライマー、ステインラッカー
2-(Thiocyanomethylthio)benzothiazole	21564-17-0	HPLC	農薬、塗料、壁紙用接着剤	×	塗料、スライムコントロール、農業用殺菌剤
2-Hydroxy-4-isopropyl-2,4,6-cycloheptatrien-1-one	499-44-5				繊維、紙、化粧品
2,4,5,6-Tetrachloroisophthalonitrile	1897-45-6	GC	壁紙用接着剤	○	プラスチック、農業用殺菌剤
Zinc bis(2-pyridylthio-1-oxide)	13463-41-7	HPLC	シャンプー、リンス	○	化粧品、皮革、船底塗料、接着剤、石膏ボード、用水、紙、木材、プラスチック
2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine	13108-52-6	HPLC	塗料		プラスチック、塗料、紙
4-Chloro-3,5-dimethylphenol (p-Chloro-m-xyleneol)	88-04-0	GC, HPLC	防虫・防カビ剤、殺菌剤	○*	防カビ剤、家庭用防虫剤、医薬、化粧品、医環境、環境
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	59-50-7	GC, HPLC	防虫・防カビ剤		防カビ剤、塗料、接着剤、繊維、皮革、切削油、ワックス
N-(Fluorodichloromethylthio)phthalimide	719-96-0	GC	寝具	○	塗料、プラスチック
p-Chlorophenyl-3-iodopropargylformal	29772-02-9	GC	抗カビ・防虫塗料	○	繊維、木材、皮革、塗料
1-Bromo-3-ethoxycarbonyl-1,2-diiodo-1-propene	77352-88-6	GC	壁紙用接着剤	○	木材防霉・防黴
4,4'-Tetramethylene-bis(4-carbomoyl-1-decylpyridinium bromide)	Unknown	HPLC	塗料、壁紙用接着剤	×	医用光学機器、食品工業、医環境、環境、塗料
N,N'-Hexamethylenebis(4-carbamoyl-1-decylpyridinium bromide)	Unknown	HPLC	塗料、壁紙用接着剤	×	医用光学機器、食品工業、医環境、環境、塗料、紙パルプ
2-Chloroacetamide	79-07-2				防カビ剤、接着剤、皮革、靴みがき剤、化粧品
Isobornyl thiocanoacetate	115-31-1	GC	繊維製品	×	抗菌剤
10,10'-Oxy-bis(phenoxyarsine)	58-36-6	HPLC	PVC人工皮革	○	抗菌剤
Hiba oil	Unknown	GC	繊維製品	○	抗菌剤

\* 市販製品の品質記載欄より確認。

\*\* 防菌防黴剤事典-原体編-(文献15)より抜粋

表8. ニュートラルレッド細胞毒性試験の結果

Chemical	Abbreviation	CAS No.	Cytotoxicity	
			IC50(μg/ml)	Rank
2-Bromo-2-nitropropane-1,3-diol	BNPD	52-51-7	7.7	Strong
1,2-Benzisothiazolin-3-one	BIT	2634-33-5	4.0	Strong
N-n-Butyl-1,2-benzisothiazolin-3-one	BBIT	4299-07-4	6.6	Strong
Methyl-N-(2-benzimidazolyl)carbamate	MBIC	10605-21-7	23.1	Strong
4,4'-Dimethyl-1,3-oxazoline	DMO	51200-87-4	46.0	Moderate
3,4,4'-Trichlorocarbanilide	TCC	13208-22-5	407	Weak
3-Iodo-2-propynylbutylcarbamate	IPBC	55406-53-6	2.9	Strong
N-Dimethyl-N'-phenyl-N'-(fluorodichloromethylthio)sulfamide	DMPFS	1085-98-9	8.7	Strong
2-(Thiocyanomethylthio)benzothiazole	TCMTBT	21564-17-0	1868	Weak
2-Hydroxy-4-isopropyl-2,4,6-cycloheptatrien-1-one	HICHO	499-44-5	29.0	Strong
2,4,5,6-Tetrachloroisophthalonitrile	TPN	1897-45-6	0.65	Strong
Zinc bis(2-pyridylthio-1-oxide)	ZPT	13463-41-7	0.42	Strong
2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine	TCMSP	13108-52-6	1.32	Strong
4-Chloro-3,5-dimethylphenol (p-Chloro-m-xyleneol)	PCMX	88-04-0	37.0	Moderate
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	PCMC	59-50-7	89.9	Moderate
N-(Fluorodichloromethylthio)phthalimide	FPI	719-96-0	14.1	Strong
p-Chlorophenyl-3-iodopropargylformal	CPIP	29772-02-9	6.2	Strong
1-Bromo-3-ethoxycarbonyl-1,2-diiodo-1-propene	BECDIP	77352-88-6	1.7	Strong
4,4'-Tetramethylene-bis(4-carbamoyl-1-decylpyridinium bromide)	TMBCDPB	Unknown	6.8	Strong
N,N'-Hexamethylenebis(4-carbamoyl-1-decylpyridinium bromide)	HMBCDPB	Unknown	7.0	Strong
2-Chloroacetamide	CAA	79-07-2	47.5	Moderate
Isobornyl thiocynoacetate	IBTA	115-31-1	32.3	Strong
10,10'-Oxy-bis(phenoxyarsine)	OBPA	58-36-6	4.2	Strong
Hiba oil	HO	Unknown	16.2	Strong

IC50値

35 μg/ml未満: 強い細胞毒性物質, 眼で明らかな刺激性が誘発される危険性が高い

35以上350 μg/ml未満: 中程度の細胞毒性物質, 眼で刺激性が誘発される可能性がある

350 μg/ml以上: 弱い細胞毒性物質, 眼で刺激性が誘発される可能性が低い

表9. 欧州において既存活性物質としての届け出に当たって必要とされる毒性情報(文献5改変)

番号	項目	必須情報 <sup>a)</sup>	可能なら提出	最終版 <sup>b)</sup>
6.1.1.	Aute toxicity - Oral	×		
6.1.2.-6.1.3.	Aute toxicity - Dermal or inhalation	×		
6.1.4	Aute toxicity - Skin and eye irritation	×		
6.1.5	Aute toxicity - Skin sensitization	×		
6.2	Meabbolism studies in mammals		×	×
6.3.-6.4.	Subchronic toxicity 90-day study or a short-term repeated dose toxicity study (28 days). The 90-day study shall be submitted if available. The 28-day-study shall not be conducted if not available.	×		×
6.5.	Chronic toxicity		×	×
6.6.1.	In vitro gene mutation study in bacteria	×		
6.6.2.	In vitro cytogenicity study in mammalin cells	×		
6.6.3.	In vitro gene mutation assay in mammalin cells	×		
6.6.4.	In vivo genotoxicity study (if possible in 6.6.1, 6.6.2 or 6.6.3)	×		
6.6.5.	A second in vivo genotoxicity study (if negative in 6.6.4 but positive in vitro tests)	×		
6.6.6.	If positive in 6.6.4 then a test to assess possible germ cell effect may be required	×		
6.7.	Carcinogenicity study		×	×
6.8.1	Teratogenicity test		×	×
6.8.2.	Fertility study		×	×
6.9.4 (6.12.4.)	Epidemilological studies on the general population, if available		×	

<sup>a)</sup> Information on an endpoint is only mandatory of the endpoint required for a complete dossier for the notified product type/field of use. Justification shall be provided , if information on an endpoint is not submitted because it is not scientifically necessary or technically possible to supply.

<sup>b)</sup> IA: information on available; Fin. Date: not the target finalisation data for ongoing or commissioned studie; NR: information which the applicant dose not believe is necessary for proper risk assessment and for which a justification is provided; this shall not predetermine the vertication in accordance with Article 11(1)(b) of the Directive.