Chemical product and substance indicators in the SEEA– health and environment

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Environmental accounts

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Preface

Since 1993, Statistics Sweden is developing physical environmental accounts as a satellite system to the National Accounts, to present information on the connections between environment and economy. The system is also known under the acronym SEEA, System of Environmental and Economic Accounts. The environmental accounts connect economical data such as value added and employment in different industries with physical environmental data such as use of material/chemicals/natural resources, emissions, and waste. The environmental accounts also include other areas such as environment industry, environmental taxes and subsidies and environmental protection expenditures.

This report has been prepared on commission from EUROSTAT, which supports and co-ordinates the development of environmental statistics in the EU Member States. The European Commission DG Environment has contributed financially to the project. Johan Håkans, Lars Davidsson and Margareta Östman at the Swedish Chemicals Inspectorate have kindly provided data and helpful advice. Viveka Palm is responsible for the report and has been project leader for the work.

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1 Introduction

An important part of the material flow information in the System of Economic and Environmental Accounts (SEEA) framework is the information on chemical product use. Information about the use, spreading and waste handling of chemicals is of importance as an input to the work to decrease environmental and health risks. The Product Register, kept by the National Chemicals Inspectorate (KemI), plays an important role in Swedish control of chemical products.

In an earlier project we have collected chemical product data in tonnes for a number of years and presented them in a SEEA framework, using two different aggregation methods based on classification of hazardous chemical products (Palm and Jonsson, 2001). The data were divided between non-fossil chemical products and fossil chemical products. These indicators to picture societies use of chemicals with SEEA data has been published and used in different studies (see e.g. Finnveden et al, 2001; Palm, 2001; SCB, 1998; SCB, 2000; Tema Nord 2000).

In this report we complement the data set on the chemical products for the two previously defined indicators for the year 2000. In the risk labelled category we now also included environmental criteria, which has not been done earlier.

Furthermore we calculate and present different intensities, chemical products per value added or by production volume, per industry of non-fossil chemical products. We hope these intensities can be used by the international modelling community as an approximation for chemical use when other data is lacking.

We also study the possibilities of linking the use of environmentally hazardous *substances* (as a complement to the use of chemical products) to industries through the PBT- criteria (Persistence/Bio accumulating/Toxic), which are suggested in different political documents on chemical policy.

This information facilitates using the Swedish chemical product data in international work. We also present chemicals aggregated as tonnes of PBT-classified products or substances by industry.

2 Method

In 1986, KemI was formed as an authority responsible for minimising risks to humans and environment from the use of chemicals. Sweden has since 1992 registered components of chemical products in the Products Register. The register was constructed mainly as a tool for the superintendence of importing and manufacturing companies, but it also contains chemical information of the registered products as well as quantities used.

The Products Register in Sweden is one of a kind. Norway, Denmark and Finland have similar registers but with different scope and system boundaries (TemaNord 1999). In Sweden the declaration requirements are based on the customs tariff codes, so that as a general rule, they apply to all chemical products (substances and preparations). All four countries exempt products that come under legislation on foodstuffs and medical products from mandatory declaration. Furthermore, the duty to declare products to the product registers does not apply to cosmetic products in Sweden, Norway and Finland.

The indicators are presented by industry according to the international industry classification NACE. The indicators are based on European labelling standards and are named:

- Labelled inherent properties (lip) of chemical products
- Risk for long term effect, CSMR or CSMRE (cancer, sensitising, mutagenic, reprotoxic, environmental criteria)
- Persistant, bioaccumulating and toxic substances (PBT)

2.1 Indicators for chemical products per industry

The companies that report to the Products register, mainly importers or producers of chemical products, give information on what type of industry that will use the chemical product. The company information is confidential, but when the data is sufficiently aggregated it can be made publicly available. Parts of the register are available at the web-site (www.kemi.se). For the fossil fuels the refineries and retailers are noted as users, which is not satisfactory for SEEA purposes. Since the environmental accounts give a more detailed picture on which actors do use the fossil fuels, based on fuel statistics, that information may complement the Product Register.

In order to be able to give an account for all chemical products in question, and avoid a substance per substance approach that would be overwhelming due to the number of products involved, we use two different aggregation methods (Palm and Jonsson, 2001). The aggregation and division per industry also makes it possible to show data that would be secret when presented for example by company.

Aggregation on labelling of inherent properties (lip)

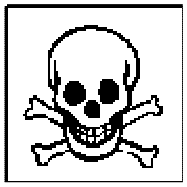
The first aggregation method, which is the broadest category and focuses on direct inherent properties, sorts out those chemical products that are labelled as very toxic (T+), toxic (T), corrosive (C), harmful (Xn) or irritant (Xi), according to Directive 67/548/EC (Classification and labelling of dangerous substances) (Figure 1). For health hazardous substances there are rules on how to label chemical products on the grounds of the content of a hazardous substance.

The label Dangerous for the environment (N) has now been included in the aggregation. However it is rather new and only a few chemical products have yet been labelled. A new directive has recently suggested methods for how to interpret the labelling of chemical products containing environmentally classified substances. Therefore, the trends in the time series the coming years will be a measure of the testing situation rather than the amount of chemicals used (Margareta Östman, KemI, Personal communication). The rules for classification of substances and labelling of chemical products can be viewed at www.kemi.se

Figure 1. Classification and labelling of dangerous substances (Directive 67/548/EC)

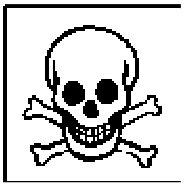
Symbols and indications of danger

T+



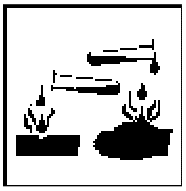
Very toxic

T



Toxic

C



Corrosive

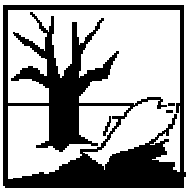
Xn

Harmful

Xi

Irritant

N



Dangerous for the environment

Aggregation on labelling of risk phrases for chronic diseases (CSMR – Carcinogenic, Sensitising, Mutagenic, Reprotoxic)

The second aggregation method focuses on the chemical products that are labelled as being able to cause cancer, sensitisation either by inhalation or by skin contact, as well as those with documented mutagenic and reproductive hazardous properties. The risk-phrases that were sought for are listed in Figure 2. The directive 67/548/EC contains many more risk phrases than those chosen for the second aggregation method (see e.g. www.kemi.se).

The reasons for choosing the categories in figure 2 are twofold:

- To give a picture of the amount of chemical products with properties that can give chronic diseases to those exposed.
- To focus on such categories where the underlying data classification is available for many chemical products.

The amount of chemical products in this group becomes smaller than with the first aggregation method, as many R-phrases signalling acute toxicity or other acute effects are not included here.

In the category Carcinogenic, the R-phrases R45, R49 and R340 are included. In the category Sensitisation R42 and R43 are included. The R-phrases R60-R63 are included in the Reproductive toxicity category. Mutagenic are then R40 and R46. Also in this case, as for the first aggregation method, there are very few chemical products that have data on environmentally damaging properties, but we suggest that they should be included as the reporting is now becoming better.

Figure 2. Labelling of risks, with the risk phrases used in the search for chemical products, for the groups mutagenic, sensitising, carcinogenic, reprotoxic and dangerous for the environment. The results from searching for R50-R59 are not shown in the results as the reporting has only just started and thus the data series are not representative of the use.

Single risk phrases	
R 40	Possible risks of irreversible effects
R 46	May cause heritable genetic damage
R 42	May cause sensitisation by inhalation
R 43	May cause sensitisation by skin contact
R 45	May cause cancer
R 49	May cause cancer by inhalation
R 340	Some risk of cancer cannot be excluded after frequently repeated exposure
R 60	May impair fertility
R 61	May cause harm to the unborn child
R 62	Possible risk of impaired fertility
R 63	Possible risk of harm to the unborn child
R 50	Very toxic to aquatic organisms
R 51	Toxic to aquatic organisms
R 52	Harmful to aquatic organisms
R 53	May cause long-term adverse effects in the aquatic environment
R 54	Toxic to flora
R 55	Toxic to fauna
R 56	Toxic to soil organisms
R 57	Toxic to bees
R 58	May cause long-term adverse effects in the environment
R 59	Dangerous for the ozone layer

Fossil and non fossil chemical products

The chemical products have been divided into two groups, the fossil fuels and the rest. This is due to the fact that the fossil fuels are so dominating that other chemical products are not properly viewed when the two groups are shown together. Some of the chemicals in the 'non-fossil' grouping will be of fossil origin, but not used for fuelling purposes. This division can hopefully be better termed in the future, but for now the labels 'fossil fuels' and 'non-fossil chemical products' are used for lack of better.

In the Product Register there is no special marking separating the fossil fuels from the rest of the chemical products. Therefore, a search was made on chemical products exempting those with functions that are marked as fuels (function number 290-294 in the register). In this report we present the non-fuel part of the search only, as the SEEA already record the fuels per industry.

The coupling to industry

The Product Register includes information from the reporting companies on to which industry the chemical products are sold. The company can name three different types of industries per chemical product. Some companies, but not all, include information on the amount sold to each industry. Before, there were problems with double counting when the chemicals were divided between the different industries 'automatically'. However, now the National Chemicals Inspectorate has made a routine that divides the amount of chemicals equally between the industries when information is lacking. In this way, the problem with double counting is less apparent.

2.2 Indicators for Persistent, Bioaccumulating, Toxic substances

Here we will propose and test a new aggregation method based on substances rather than on chemical products.

For this project a list of 'possible' PBT-substances has been used (see annex 1). PBT stands for Persistent, Bioaccumulating and Toxic, and describes inherent properties of the substances concerned. The list has been made by the authorities as a material for discussion in the OSPAR-convention (The OsloParis convention for protection of the marine environment in the North East Atlantic). Due to lack of data the classification on persistence, the list is still tentative. Still it will give an indication on which substances that are under discussion as priorities for protection of the environment. The list is dynamic and available on the OSPAR website www.ospar.org. The substances on the list follow the criteria

OSPAR List of Substances of Possible Concern

P: Not readily biodegradable-**and**

B: log K_{ow}>=4 or BCF>=500 **and**

T_{aq}: acute L(E)C_{50}=<1 mg/l, long-term NOEC=<0,1 mg/l **or**

$T_{mammalian}$: CMR or chronic toxicity

The substances on the OSPAR List of Substances of Possible Concern have been identified by a worst case screening of a number of databases with experimental data on P, B and T. However, when experimental data are not available, substances have been identified by employing different models (QSARs: Quantitative Structure Activity Relationships) which estimate these values on the basis of chemical structure. The

screening is not exhaustive as not all possible data sources have been available or because of limitations in the models employed. Furthermore, some substances may falsely have been selected due to data errors or outliers.

A number of substances which do not meet the full P, B and T criteria have also been added to the List of Substances of Possible Concern because it has been recognised that they give rise to a similar level of concern (for example, endocrine disruptors, or shown to be widely spread in the marine environment by monitoring). The procedures with which OSPAR may add further substances to the list on the basis of equivalent concern are still under development.

For this report the Chemical Abstract Numbers (CAS-numbers) from the list has been searched for in the Product Register and matched with the volumes of substances reported. The totals have been divided per industry on the basis of the information in the register. This type of analysis has been made by KemI and the Swedish environmental protection agency in a governmental assignment for the year 1997, for eleven industries and a PBT-list of 219 substances (NV, 1999), and similar data is also published regularly in their statistical overview which is available on www.kemi.se. The results will be of interest for those who would like an overview of the amount of the substances discussed, and an indication of which industries are involved.

3 Results

3.1 Chemical products per industry from 1996-2000

3.1.1 Time series of indicators for chemical products

In Table 1 the indicator for labelling of inherent properties is presented for the years 1996 to 2000. The total amount excluding fossil fuels is varying around eight million tonnes per year. The direct export of chemical products which is also registered at KemI is not included.

The industries with largest amounts of classified non-fossil chemical handled are the basic chemicals industry (NACE 24.1) with 27% of that amount in 2000, then the glass and cement industry (NACE 26) and the pulp and paper industry (NACE 21). These three industries make up 67 percent of total amount in 2000. The indicator can be split so that the amounts recorded for each label is registered (Table 2).

The trends over time show no particular pattern. When data series jump as e.g. transport and governmental services (NACE 75) between 1998 and 1999 or for mining and quarrying (NACE 10-14) from 1999 to 2000, there is probably a changed labelling strategy that makes some products disappear from the register. In this project we have not had the possibility to go back to the underlying data and analyse the components.

In Table 3 the indicators for CSMRE-risks are presented for the years 1996-2000. In this time-series the environmental risks are included as a part of the indicator. In earlier work this has not been included. The labelling of environmental properties is still not common practise and the amounts registered so far are small compared to what is expected in the future.

Table 1. Use of chemical products in Sweden, labelled for inherent properties, excluding fossil fuels. Tonnes

Nace	Type of industry	1996	1997	1998	1999	2000
01	Agriculture	25 236	20 089	26 245	24 277	25 105
02	Forestry	50	184	49	46	77
05	Fishing	112	141	4	6	4
10-14	Mining and quarrying	106 172	98 874	108 188	128 539	9 094
15-16	Manufacture of food products and beverages	50 098	52 473	65 679	53 783	50 728
17-19	Textile and clothing industry	5 105	5 000	4 509	4 526	4 420
20	Manufacture of wood and products of wood	37 998	35 932	35 345	40 412	44 339
21	Pulp and paper	961 948	1 071 929	1 105 192	1 099 377	1 191 433
22	Publishing, printing and reproduction	7 233	6 295	6 002	6 532	13 371
23	Refineries	167 734	323 540	233 083	434 928	591 415
24.1	Manufacture of basic chemicals	2 438 270	2 530 405	2 515 785	1 770 492	2 164 110
24.2	Manufacture of pesticides	505	457	285	306	247
24.3	Manufacture of paint	120 466	115 702	76 701	73 018	83 840
24.4	Manufacture of pharmaceuticals	5 294	6 004	21 132	6 064	9 477
24.5,7	Manufacture of soap and detergents and synthetic fibre	35 419	87 477	62 331	95 250	88 987
24.6	Manufacture of other chemicals and chemical products	144 347	187 758	194 739	236 284	281 485
25	Manufacture of rubber and plastic products	178 915	181 333	207 197	213 372	186 536
26	Manufacture of other non-metallic mineral products	1 707 148	2 646 339	1 845 164	2 917 036	1 947 048
27	Manufacture of basic metals	237 839	335 727	368 425	252 257	320 866
28	Manufacture of fabricated metal products, tools	43 054	47 277	49 544	50 655	60 153
29	Manufacture of fabricated metal products	2 534	3 179	3 467	3 081	2 878
30	Manufacture of machinery and equipment	4 151	4 504	4 029	3 961	3 658
31	Manufacture of office machinery and computers, electric	27 948	19 091	20 286	10 864	10 469
32	Manufacture of electrical machinery, radio, television etc.	655	751	643	496	748
33	Manufacture of medical and optical instruments	120	17	17	34	27
34-35	Manufacture of vehicles, trailers and other transport equipment	9 863	9 507	10 327	10 717	8 069
36-37	Manufacture of furniture	6 682	5 614	3 890	3 300	3 289
40-41	Electricity and water supply	86 682	98 883	113 853	148 767	174 004
45	Construction	334 912	333 812	200 105	224 452	218 194
50-52	Wholesale and retail trade; repair of goods	144 924	157 354	156 412	164 474	198 505
55	Hotels and restaurants	2 215	3 872	3 682	4 015	4 606
60-64	Transport	32 068	36 680	63 693	5 103	5 791
70-74	Houses and Renting companies	3 409	3 319	3 139	3 326	3 022
75	Governmental services	4 497	3 169	3 171	240	410
80-85	Education and health	4 193	1 785	1 714	1 975	1 866
90-95	Other services	160 511	120 184	171 707	209 995	206 591
Rounded Total Tonnes		7 098 000	8 555 000	7 686 000	8 202 000	7 915 000

Table 2. The components of labelled inherent properties for non-fossil chemical products by industry for the year 2000 in tonnes. Corrosive (C), dangerous for the environment (N), toxic (T), very toxic (Tx), irritant (Xi) and harmful (Xn).

Nace	Type of industry	C	N	T	Tx	Xi	Xn
01	Agriculture	13 425	6	325	11	3 673	7 665
02	Forestry	2				5	70
05	Fishing			3		0	0
10-14	Mining and quarrying	499	262	2 156		4 039	2 139
15-16	Manufacture of food products and beverages	44 187	110	425	1	5 181	824
17-19	Textile and clothing industry	2 046	8	68	12	1 148	1 138
20	Manufacture of wood and products of wood	7 792	134	12 916		12 438	11 059
21	Pulp and paper	763 814	118	55 758		268 821	102 922
22	Publishing, printing and reproduction	260	5	37		4 031	9 039
23	Refineries	754	881	198 867	0	8 683	382 230
24.1	Manu. of basic chemicals	514 800	59 118	1 271 156	5 832	191 470	121 734
24.2	Manu. of pesticides			0		79	169
24.3	Manu. of paint	1 965	8 607	453	0	20 626	52 189
24.4	Manu. of pharmaceuticals	1 996	252	350	35	4 914	1 930
24.5,7	Manu. of soap and detergents and synthetic fibre	59 606	522	78	3 840	14 852	10 088
24.6	Manu. of other chemicals and chemical products	108 816	2 134	75 783	693	79 359	14 701
25	Manu. of rubber and plastic products	843	1 825	86 069	517	12 631	84 651
26	Manu. of other non-metallic mineral products	229 698	6 075	9 602	5	1 675 120	26 548
27	Manufacture of basic metals	75 703	75	23 083	2 599	164 496	54 909
28	Manu. of fabricated metal products, tools	13 647	943	8 178	1 282	12 087	24 016
29	Manu. of fabricated metal products	114	9	34	0	891	1 830
30	Manu. of machinery and equipment	98	0	2 462	1	1 054	43
31	Manu. of office machinery and computers, electric	5 609	57	1 714	0	762	2 327
32	Manu. of electrical machinery, radio, television etc.	300	0	26	15	330	76
33	Manu. of medical and optical instruments	3	0	0		14	10
34-35	Manu. of vehicles, and other transport equipment	628	5	122	1	1 697	5 615
36-37	Manufacture of furniture	518				808	1 964
40-41	Electricity and water supply	56 880	11	550		116 135	429
45	Construction	40 128	338	4 477	0	161 878	11 374
50-52	Wholesale and retail trade; repair of goods	77 983	2 796	8 767	3 378	59 035	46 546
55	Hotels and restaurants	3 641				834	132
60-64	Transport	189	0	22	557	2 464	2 559
70-74	Houses and Renting companies	582	17	84	3	1 749	585
75	Governmental services	2				402	6
80-85	Education and health	1 265	2	9	0	218	372
90-95	Other services	91 128	255	1 985	0	81 079	32 143
	Total	2 118 900	84 600	1 765 600	18 800	2 913 000	1 014 000

Table 3. CSMRE-risk labelled chemical products, excluding fossil fuels. Tonnes

Nace	Type of industry	1996	1997	1998	1999	2000
01	Agriculture	2 352	2 327	3 290	4 239	4 141
02	Forestry	0	8	9	65	56
05	Fishing	4	6	3	6	7
10-14	Mining and quarrying	43	155	470	414	304
15-16	Manufacture of food products and beverages	469	326	465	250	210
17-19	Textile and clothing industry	836	966	1 083	1 148	861
20	Manufacture of wood and products of wood	34 423	37 712	38 967	37 745	42 696
21	Pulp and paper	29 177	21 641	20 545	29 210	30 875
22	Publishing, printing and reproduction	1 708	637	818	447	699
23	Refineries	143 926	294 695	212 918	125 763	196 355
24.1	Manufacture of basic chemicals	365 785	1 203 431	1 234 002	786 388	844 766
24.2	Manufacture of pesticides	171	184	139	186	113
24.3	Manufacture of paint	13 559	10 467	12 817	10 588	11 295
24.4	Manufacture of pharmaceuticals.	312	337	600	1 346	2 015
24.5,7	Manu. of soap and detergents and synthetic fibre	1 560	2 260	3 019	2 014	2 059
24.6	Manu. of other chemicals and chemical products	62 923	42 586	53 965	95 752	163 037
25	Manufacture of rubber and plastic products	21 548	20 042	30 605	24 824	21 768
26	Manufacture of other non-metallic mineral products	134 079	2 321 211	1 519 906	2 502 472	1 569 173
27	Manufacture of basic metals	5 253	112 280	124 297	91 575	137 693
28	Manufacture of fabricated metal products, tools	19 266	21 105	26 965	21 289	26 332
29	Manufacture of machinery and equipment	398	859	1 078	901	923
30	Manufacture of office machinery and computers, electric	6 769	7 500	6 695	6 536	5 836
31	Manufacture of electrical machinery, radio, television etc.	6 637	1 424	1 465	3 182	2 116
32	Manufacture of telecom products	244	297	282	187	167
33	Manufacture of medical and optical instruments	3	2	1	1	1
34-35	Manufacture of vehicles, trailers and other transport equipment	2 991	1 869	1 833	2 666	2 450
36-37	Manufacture of furniture and consumer products. Recycling	11 799	12 887	9 287	5 943	5 303
40-41	Electricity and water supply	205	124	122	142	199
45	Construction	142 696	141 895	97 539	100 801	70 016
50-52	Wholesale and retail trade; repair of goods	37 522	39 787	33 871	51 418	60 960
55	Hotels and restaurants	0	0	0	0	76
60-64	Transport	29 978	22 184	51 094	1 755	1 416
70-74	Houses and Renting companies	390	346	360	357	357
75	Governmental services	17	12	11	11	11
80-85	Education and health	336	261	354	400	526
90-95	Other services	10 428	236	510	538	265
Export		518 457	330 347	336 079	477 929	1 848 389
	Total including exports (rounded)	1 608 000	4 654 000	3 827 000	4 390 000	5 055 000
	Total excluding exports (rounded)	1 090 000	4 424 000	3 491 000	3 912 000	3 207 000

3.2 Intensities for non-fossil chemical products

Here we will present intensities for non-fossil chemical products. The non-fossil products are representing a smaller amount of the total amount of chemical products that are labelled as hazardous or causing risks.

The major part of chemical products that are of concern for classification as hazardous or causing risks are petroleum products used for fuel, such as petrol and diesel. For these substances, most countries have their own energy statistics or environmental accounting data to use, if they are interested in reporting chemical indicators. However, for the other chemical products, that we here chose to call non-fossil, in the Product Register the Swedish data are unique.

We suggest that by expressing the data as intensities, that is, as tonnes reported normalised with the production value or value added of the industry in question, the Swedish data could be used as an approximation for other nations as well. The usefulness of the data in this respect has yet to be tested, but as a first step we will present the intensities for two health related chemical product indicators for the years 1996-1999. First the chemical product labelled for intrinsic hazardous properties (lip) and second the chemical products labelled as cancerogenic, sensitising, mutagenic and reprotoxic, CSMR indicators respectively (Table 4-7).

The intensities per production value can be used for input-output calculations, when looking at how consumption is related to chemical product use. With the help of data on how different industries buy and sell products and services, monetary input-output matrices can be constructed to calculate the chemical product use per product group. The production value includes the value of purchased goods and is therefore higher that value added, where purchased goods is not included in the figure.

The intensities per value added are intended to be used as a normalisation factor compared to GDP, e.g. to see how a business cycle affects the use of chemical products.

For the lip indicator, manufacture of basic chemicals (NACE 24.1) has the highest intensity 309-327 tonnes per MSEK value added during the period 1996 to 1999. The glass and cement industry (NACE 26) also had a high intensity value of between 54 and 89 tonnes per MSEK value added.

The CSMR-labelled chemical product intensity also had manufacture of basic chemicals (NACE 24.1) on top with between 48 and 174 tonnes per MSEK value added. The following industry is however refineries with 37 to 54 tonnes per MSEK during the time period.

Table 4. Lip chemical products other than fuels per production value. [tonnes/MSEK]

NACE	Type of industry	1996	1997	1998	1999
01	Agriculture	0,7749	0,6112	0,8230	1,8745
02	Forestry	0,0020	0,0071	0,0019	0,0018
05	Fishing	0,1022	0,1268	0,0035	0,0054
10-14	Mining and quarrying	9,0846	7,4543	8,5033	11,0324
15-16	Manufacture of food products and beverages	0,4390	0,4503	0,5678	0,4603
17-19	Textile and clothing industry	0,3996	0,4006	0,3510	0,3629
20	Manufacture of wood and products of wood	0,7890	0,6678	0,6370	0,7070
21	Pulp and paper	10,7827	12,0425	12,1732	11,7942
22	Publishing, printing and reproduction	0,1227	0,1044	0,0943	0,1029
23	Refineries	6,0850	10,2210	8,9517	14,6443
24.1	Manufacture of basic chemicals	94,2424	92,0782	87,7863	76,3394
24.2	Manufacture of pesticides	0,0803	0,0712	0,0422	0,0423
24.3	Manufacture of paint	3,5814	3,2089	1,8932	1,9251
24.4	Manufacture of pharmaceuticals	0,6519	0,7289	2,5624	0,7381
24.5,7	Manufacture of soap and detergents	1,2878	2,9175	1,9644	2,9395
24.6	Manufacture of other chemicals and chemical products	7,3849	9,6081	9,7056	11,2993
25	Manufacture of rubber and plastic products	2,5742	2,3327	2,8955	2,9802
26	Manufacture of other non-metallic mineral products	25,3405	36,3039	23,2729	36,7476
27	Manufacture of basic metals	2,0345	2,7503	2,8448	1,8698
28	Manufacture of fabricated metal products, tools	9,1556	10,3685	8,0306	8,7888
29	Manufacture of machinery and equipment	0,0895	0,1097	0,1055	0,0957
30	Manufacture of office machinery and computers, electric	0,0457	0,0401	0,0327	0,0248
31	Manufacture of electrical machinery, radio, television etc.	0,9297	0,5410	0,5230	0,2707
32	Manufacture of medical and optical instruments	0,0044	0,0047	0,0036	0,0026
33	Manufacture of vehicles, trailers and other transport equipment	0,0043	0,0006	0,0005	0,0010
34-35	Manufacture of furniture and consumer products. Recycling	0,1323	0,1259	0,1437	0,1560
36-37	Electricity and water supply	0,0477	0,0409	0,0269	0,0214
40-41	Construction	0,3429	0,3816	0,4145	0,5169
45	Wholesale and retail trade; repair of goods	6,3604	6,1023	3,3874	3,5412
50-52	Hotels and restaurants	0,5674	0,5709	0,5449	0,5339
55	Transport	0,0298	0,0506	0,0540	0,0545
60-64	Houses and Renting companies	1,2019	1,2670	1,8449	0,1403
70-74	Governmental services	0,0064	0,0058	0,0052	0,0051
80-85	Education and health	0,1161	0,0473	0,0387	0,0387
90-95	Other services	3,0116	2,1100	2,7298	3,1553

Table 5. Lip chemical products other than fuels per value added. [tonnes/MSEK]

Nace	Type of industry	1996	1997	1998	1999
01	Agriculture	2,0760	1,6848	2,2504	5,0831
02	Forestry	0,0023	0,0082	0,0022	0,0021
05	Fishing	0,1950	0,2407	0,0069	0,0102
10-14	Mining and quarrying	22,1699	17,2195	19,5815	28,6597
15-16	Manufacture of food products and beverages	1,5896	1,6518	2,0866	1,6422
17-19	Textile and clothing industry	1,0799	1,0838	0,9319	0,9084
20	Manufacture of wood and products of wood	2,6236	2,1402	2,1406	2,4161
21	Pulp and paper	33,8821	38,7383	38,2452	37,2292
22	Publishing, printing and reproduction	0,2970	0,2474	0,2218	0,2352
23	Refineries	45,9923	58,9155	40,9031	133,2035
24.1	Manufacture of basic chemicals	318,2189	327,2335	313,6350	309,0758
24.2	Manufacture of pesticides	0,2407	0,2166	0,1275	0,1320
24.3	Manufacture of paint	6,7439	6,0993	3,5834	3,6340
24.4	Manufacture of pharmaceuticals	1,9849	2,2426	7,6288	2,3182
24.5,7	Manufacture of soap and detergents	3,5146	7,9948	5,4632	8,1095
24.6	Manufacture of other chemicals and chemical products	18,0806	23,5609	23,8122	26,9307
25	Manufacture of rubber and plastic products	9,2844	8,9980	11,0748	11,7105
26	Manufacture of other non-metallic mineral products	60,3645	89,2873	54,8045	84,9233
27	Manufacture of basic metals	5,3789	7,4269	7,7978	5,1295
28	Manufacture of fabricated metal products, tools	21,6392	24,2286	18,8123	20,5716
29	Manufacture of machinery and equipment	0,2440	0,3063	0,3001	0,2839
30	Manufacture of office machinery and computers, electric	0,1915	0,2117	0,2152	0,1966
31	Manufacture of electrical machinery, radio, television etc.	2,0965	1,2659	1,2552	0,6598
32	Manufacture of medical and optical instruments	0,0153	0,0167	0,0135	0,0098
33	Manufacture of vehicles, trailers and other transport equipment	0,0127	0,0018	0,0016	0,0030
34-35	Manufacture of furniture and consumer products. Recycling	0,2109	0,2014	0,2345	0,2570
36-37	Electricity and water supply	0,0956	0,0820	0,0540	0,0425
40-41	Construction	0,5212	0,5867	0,6421	0,7879
45	Wholesale and retail trade; repair of goods	14,7336	13,8138	7,6366	7,8376
50-52	Hotels and restaurants	1,1883	1,1901	1,1382	1,1427
55	Transport	0,0441	0,0768	0,0931	0,0934
60-64	Houses and Renting companies	1,9740	2,0816	2,8945	0,2215
70-74	Governmental services	0,0105	0,0097	0,0087	0,0086
80-85	Education and health	0,1980	0,0788	0,0627	0,0623
90-95	Other services	5,7424	3,9999	5,1838	5,9065
	Total	3,9	4,5	3,9	3,9

Table 6. CSMR-labelled chemical products other than fuels per production value. [tonnes/MSEK]

NACE	Type of industry	1996	1997	1998	1999
01	Agriculture	0,0722	0,0708	0,1037	0,1346
02	Forestry	0,0000	0,0018	0,0054	0,0050
05	Fishing	0,0036	0,0056	0,0028	0,0057
10-14	Mining and quarrying	0,0037	0,0117	0,0369	0,0355
15-16	Manufacture of food products and beverages	0,0041	0,0028	0,0040	0,0022
17-19	Textile and clothing industry	0,0654	0,0775	0,0844	0,0916
20	Manufacture of wood and products of wood	0,7148	0,7009	0,7027	0,6604
21	Pulp and paper	0,3271	0,2432	0,2273	0,3137
22	Publishing, printing and reproduction	0,0291	0,0106	0,0129	0,0071
23	Refineries	5,2213	9,3123	8,1787	4,2614
24.1	Manufacture of basic chemicals	14,1459	48,8961	43,9457	38,3980
24.2	Manufacture of pesticides	0,0272	0,0286	0,0205	0,0257
24.3	Manufacture of paint	0,4446	0,3242	0,3546	0,2664
24.4	Manufacture of pharmaceuticals	0,0384	0,0421	0,0727	0,1643
24.5,7	Manufacture of soap and detergents	0,0671	0,0823	0,1040	0,0680
24.6	Manufacture of other chemicals and chemical products	3,2194	2,1820	2,7127	4,6825
25	Manufacture of rubber and plastic products	0,3115	0,2592	0,4341	0,3557
26	Manufacture of other non-metallic mineral products	1,9958	31,9385	19,2511	31,5737
27	Manufacture of basic metals	0,0449	0,9198	0,9598	0,6790
28	Manufacture of fabricated metal products, tools	4,0983	4,6293	4,3720	3,6995
29	Manufacture of machinery and equipment	0,0141	0,0346	0,0374	0,0309
30	Manufacture of office machinery and computers, electric	0,0745	0,0667	0,0544	0,0408
31	Manufacture of electrical machinery, radio, television etc.	0,2208	0,0423	0,0378	0,0795
32	Manufacture of telecom products	0,0016	0,0018	0,0016	0,0010
33	Manufacture of medical and optical instruments	0,0001	0,0001	0,0000	0,0000
34-35	Manufacture of vehicles, trailers and other transport equipment	0,0401	0,0248	0,0255	0,0390
36-37	Manufacture of furniture and consumer products. Recycling	0,0843	0,0939	0,0642	0,0385
40-41	Electricity and water supply	0,0008	0,0005	0,0004	0,0005
45	Construction	2,7113	2,6010	1,6559	2,0342
50-52	Wholesale and retail trade; repair of goods	0,1472	0,1452	0,1190	0,1681
55	Hotels and restaurants	0,0000	0,0000	0,0000	0,0000
60-64	Transport	1,1236	0,7663	1,4800	0,0483
70-74	Houses and Renting companies	0,0007	0,0006	0,0006	0,0005
80-85	Governmental services	0,0093	0,0069	0,0080	0,0081
90-95	Education and health	0,1957	0,0042	0,0081	0,0033

Table 7. CSMR-labelled chemical products other than fuels per value added.
[tonnes/MSEK]

NACE	Type of industry	1996	1997	1998	1999
01	Agriculture	0,1935	0,1953	0,2836	0,3651
02	Forestry	0,0000	0,0021	0,0063	0,0058
05	Fishing	0,0069	0,0106	0,0054	0,0109
10-14	Mining and quarrying	0,0091	0,0270	0,0850	0,0923
15-16	Manufacture of food products and beverages	0,0149	0,0103	0,0148	0,0078
17-19	Textile and clothing industry	0,1769	0,2095	0,2241	0,2293
20	Manufacture of wood and products of wood	2,3768	2,2462	2,3614	2,2567
21	Pulp and paper	1,0277	0,7822	0,7141	0,9901
22	Publishing, printing and reproduction	0,0704	0,0250	0,0304	0,0161
23	Refineries	39,4643	53,6778	37,3713	38,7612
24.1	Manufacture of basic chemicals	47,7651	173,7699	157,0053	155,4621
24.2	Manufacture of pesticides	0,0814	0,0871	0,0621	0,0801
24.3	Manufacture of paint	0,8372	0,6162	0,6711	0,5029
24.4	Manufacture of pharmaceuticals	0,1169	0,1297	0,2166	0,5162
24.5,7	Manufacture of soap and detergents	0,1831	0,2256	0,2893	0,1876
24.6	Manufacture of other chemicals and chemical products	7,8821	5,3508	6,6554	11,1604
25	Manufacture of rubber and plastic products	1,1234	0,9998	1,6605	1,3978
26	Manufacture of other non-metallic mineral products	4,7542	78,5510	45,3339	72,9663
27	Manufacture of basic metals	0,1188	2,4838	2,6308	1,8627
28	Manufacture of fabricated metal products, tools	9,6862	10,8175	10,2417	8,6593
29	Manufacture of machinery and equipment	0,0384	0,0966	0,1065	0,0916
30	Manufacture of office machinery and computers, electric	0,3123	0,3525	0,3575	0,3244
31	Manufacture of electrical machinery, radio, television etc.	0,4978	0,0990	0,0908	0,1937
32	Manufacture of telecom products	0,0057	0,0066	0,0059	0,0037
33	Manufacture of medical and optical instruments	0,0003	0,0003	0,0001	0,0001
34-35	Manufacture of vehicles, trailers and other transport equipment	0,0640	0,0396	0,0417	0,0642
36-37	Manufacture of furniture and consumer products. Recycling	0,1688	0,1883	0,1288	0,0765
40-41	Electricity and water supply	0,0012	0,0007	0,0007	0,0008
45	Construction	6,2806	5,8878	3,7331	4,5024
50-52	Wholesale and retail trade; repair of goods	0,3083	0,3027	0,2486	0,3598
55	Hotels and restaurants	0,0000	0,0000	0,0000	0,0000
60-64	Transport	1,8454	1,2589	2,3219	0,0762
70-74	Houses and Renting companies	0,0012	0,0010	0,0010	0,0009
80-85	Governmental services	0,0159	0,0115	0,0129	0,0130
90-95	Education and health	0,3731	0,0079	0,0154	0,0063
	Total	0,6	2,3	1,8	1,9

3.3 Possible PBT-substances from the OSPAR-list

The total amount (import + production in Sweden) of possible PBT-substances amount to about 130 000 tonnes (Table 9). If we compare with the input based indicators above, these substances cover about 1 % of the volumes of the risk-labelled chemical products.

It is evident from the data in Table 9, that out of the 392 substances, a few are dominating in volume. Four substances cover almost the total amount (Table 8).

Table 8. The largest by volume possible PBT-substances from the OSPAR list

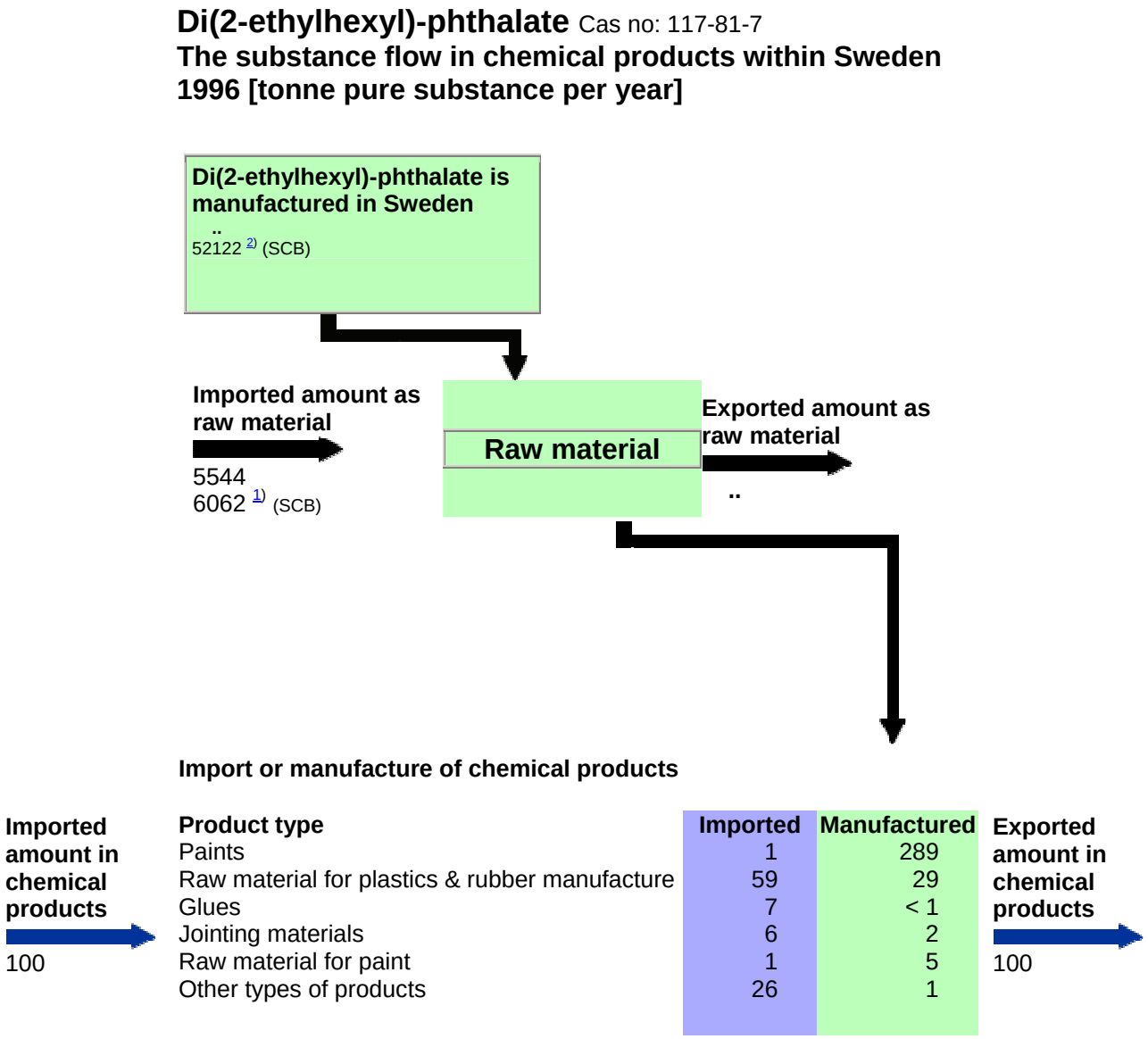
Group	CAS-number	Name	Synonym
Phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	DEHP
PAH	90640-81-6	Anthracene oil, anthracene paste	
-	80-56-8	Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl-	Pinene (a-)
PAH	56-55-3	Benz[a]anthracene	-

One of the two most dominating substances is DEHP, a phthalate with CAS-number 117-81-7. It is prioritised for action by the European Union and Sweden is the lead country. The risk assessment is being finalised and a risk reduction strategy is under discussion in the responsible expert group. A draft report from this work summarizes figures on production, export and import on a European level:

The production volume of DEHP in Western Europe for 1997 is 595,000 tonnes . Europe is a significant producer and exporter of plasticisers. In 1993 manufacturers in Europe produced 46% of the world demand of plasticisers and consumed 37% . According to ECPI, the consumption was 476,000 tonnes in 1997. According to the industry, the export of DEHP from the EU in 1997 was 186,000 tonnes. The global production of DEHP was estimated to be between 1 and 4 million tonnes 1994. The worldwide consumption of plasticisers is estimated at 3.5 million tonnes. Phthalates belong to a group of substances that accounts for 92% of the consumption of plasticisers in Western Europe. The use of DEHP corresponds to 51% of the total phthalate consumption used as plasticiser in EU. For the entire plasticiser consumption in Western Europe (phthalates and others) approximately 90% are used in PVC.

The physical and chemical properties of the phthalates have made them suitable as plasticisers in polymers such as plastic and also rubber. This is the overwhelming dominant use, and among the phthalates DEHP predominates. It has many possible applications, especially for PVC. The largest quantities of DEHP are found in products for flooring, wall hangings, cable, foil and plastic-coated fabrics. Phthalates are also included as plasticiser for binders in different kinds of paint and adhesives (see flow diagram Figure 3). They have several other applications, and those with shorter chains are used, for example, as solvents in perfumes and pesticides.

Figure 3. Flow diagram for DEHP. Source: www.kemi.se



- Number of products containing the substance: 178, of which 15 are consumer products.
- All data are from 1996 and retrieved from the Products Register if nothing else is stated.

.. Data are not available.
Data are available but cannot be published, e.g. for secrecy reasons. Marks with two dots mean either amounts, type of product or type of use.

1 Figures from SCB-Statistics Sweden, 1996, quantity includes all dioctylortophthalates.
2 SCB-Statistics Sweden, 1995. The quantity includes all dioctylortophthalates.

The other large substance, a PAH, has the CAS-number 90640-81-6, anthracene oil. The heavier distillates of coal tar are called anthracene oil and/or heavy oil. The products known as creosote are mixed from such fractions. Creosotes are widely used for impregnating wood. The use of this substance is restricted for particular uses in Sweden, and has recently been more restricted in the EU as a whole. Another common use is to pyrolyse them to carbon black, a use where the substance is synthesised so that it no longer is a PBT-substance. A minor proportion is used for admixture to pitch and asphalt, to give them the right consistency for use, e.g. as road surfacing.

Table 9. Use of possible PBT substances by industry, in falling order, for the year 2000.

	Industry coding KemI	tonnes
EXP	Exports	55087
24.14	Manufacture of basic chemicals (org)	39518
25.2	Manufacture of plastic products	13057
31	Manufacture of electrical machinery and apparatus	7915
51.12	Agents sales of fuel, ore, metal and industr. chem	7912
24.6	Manufacture of other chemical products	1018
24.16	Manufacture of plastics in primary form	534
45	Construction	518
25.1	Manufacture of rubber products	445
28.5	Treatment and coating of metals	382
34	Manufacture of motor vehicles	369
51.55	Wholesale of chemical products	289
27	Manufacture of basic metals	278
24.62	Manufacture of glues and gelatines	197
24.30	Manufacture of paints	195
24.12	Manufacture of dyes and pigments	155
21	Manufacture of pulp, paper and paper products	155
10-14	Mining and quarrying	143
52.462	Retail sale of paints	131
26.7	Cutting, shaping and finishing of stone	109
01	Agriculture	103
24.20	Manufacture of pesticides and other agro-chemical products	92
28	Manufacture of fabricated metal products, except machinery and equipment	91
26.8	Manufacture of other non-metallic mineral products	80
29	Manufacture of machinery and equipment	78
20	Manufacture of wood and wood products	73
17	Manufacture of textiles	65
50-52	Wholesale and retail trade	55
22	Publishing, printing and reproduction of recorded media	41
50	Sale, maintenance and repair of motor vehicles	33
35	Manufacture of ships, boat, rail, aircraft, motorcycles	30
50.2	Manufacture and repair of motor vehicles	23
19	Manufacture of leather and leather products	13
23	Manufacture of coke, refined petroleum products,	12
36	Manufacture of furniture	11
30	Manufacture of office machinery and computers	11
24.52	Manufacture of perfumes and toilet preparations	11
60-64	Transport, storage and communication	10
52	Retail trade, except of motor vehicles and motorcycles	8
26.1	Manufacture of glass and glass products	8
15	Manufacture of food products and beverages	5
74.7	Industrial cleaning	4
24.61	Manufacture of explosives	4
90-95	Other services	3
26.6	Manufacture of concrete, plaster and cement	3
52.496	Retail sale boat and car goods	3
73	Research and development	3
24.13	Manufacture of other inorganic basic chemicals	2
24.5	Manufacture of soap and detergents, cleaning and polishing, perfumes and toilet prep.	2
74.3	Technical testing and analysis	2
24.42	Manufacture of pharmaceutical preparations	1
	Other	6
sum		129295

4 Conclusions and discussion

In this report three different indicators for chemicals input into society are presented. The indicators are based upon aggregated information from the Product Register which contains information on chemical product production and import into Sweden. Exports are treated as a separate entity in the Product Register.

The indicators are presented by industry according to the international industry classification NACE. The indicators are based on European labelling standards and are named:

- Labelled inherent properties (lip) of chemical products. Including the labels Corrosive (C), dangerous for the environment (N), toxic (T), very toxic (Tx), irritant (Xi) and harmful (Xn).
- Risk for long term effect, CSMR or CSMRE (cancer, sensitising, mutagenic, reprotoxic, environmental criteria)
- Persistent, bioaccumulating and toxic substances (PBT)

The methods cover different aspects of chemical product risks and therefore cover different amounts of chemical products The total of lip (excluding fossil fuels) are approximately eight million tonnes per year in Sweden, equivalent to about 0,9 tonnes per capita or 3,9 tonnes per GDP[1] expressed in million SEK.

For CSMRE-labelled chemical products (excluding fossil fuels) the totals equal 3,9 million tonnes for the year 1999, and this is equivalent to 1,9 tonnes per GDP expressed in million SEK.

The aggregated PBT –substances amount to 74 000 tonnes, excluding 55 000 tonnes for export.). If we compare with the input based indicators above, these substances cover about 1 % of the volumes of the risk-labelled chemical products. Out of the 392 substances, a few are dominating in volume. Four substances cover almost the total amount. One of the two most dominating substances is DEHP, a phthalate with CAS-number 117-81-7. It is prioritised for action by the European Union and Denmark and France are the lead countries. The other large substance is anthracene oil, a PAH, with the CAS-number 90640-81-6.

[1] The Swedish GDP for 1999 was 2 079 000 000 000 SEK in current prices. www.scb.se

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Annex Possible PBT-substances list

Group	Cas	Name
Acid chloride	40567-16-6	Butanoyl chloride, 2-[2,4-bis(1,1-dimethylpropyl)phenoxy]-
Acid chloride	50772-29-7	Butanoyl chloride, 4-[2,4-bis(1,1-dimethylpropyl)phenoxy]-
Acid chloride	63059-55-2	Hexanoyl chloride, 2-[2,4-bis(1,1-dimethylpropyl)phenoxy]-
Alcohols	67124-09-8	2-Propanol, 1-(tert-dodecylthio)-
Aliphate	123-48-8	3-Heptene, 2,2,4,6,6-pentamethyl-
Aliphate	294-62-2	Cyclododecane
Aliphate	3178-22-1	Cyclohexane, (1,1-dimethylethyl)-
Aliphate	4904-61-4	1,5,9-Cyclododecatriene
Aliphate	5208-93-5	1,4-Pentadien-3-ol, 3-methyl-1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-
Aliphate	5989-27-5	Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)-
Aliphate	6842-15-5	1-Propene, tetramer
Aliphate	13475-82-6	Heptane, 2,2,4,6,6-pentamethyl-
Aliphate	23089-26-1	3-Cyclohexene-1-methanol, alpha,4-dimethyl-alpha-(4-methyl-3-pentenyl)-, [S-(R1,R1)]-
Aliphate	39083-38-0	2-Hexene, 3,4,5,5-tetramethyl-
Aliphate	40716-66-3	1,6,10-Dodecatrien-3-ol, 3,7,11-trimethyl-, (E)-
Aliphate	54914-37-3	Cyclohexanemethanamine, 1,3,3-trimethyl-N-(2-methylpropylidene)-5-[(2-methylpropylidene)amino]-
Aliphate	68877-29-2	Cyclohexanol, (1,7,7-trimethylbicyclo[2.2.1]hept-2-yl)-
Aliphate	97280-83-6	Dodecene, branched
Aliphate, nitro	75-52-5	Methane, nitro-
Aliphatic amine	69-05-6	1,4-Pentanediamine, N4-(6-chloro-2-methoxy-9-aziridinyl)-N1,N1-diethyl-, dihydrochloride
Aliphatic halogen	67-72-1	Ethane, hexachloro-
Aliphatic halogen	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
Aliphatic halogen	79-92-5	Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene-
Aliphatic halogen	80-56-8	Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl-
Aliphatic halogen	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
Aliphatic halogen	115-27-5	4,7-Methanoisobenzofuran-1,3-dione, 4,5,6,7,8,8-hexachloro-3a,4,7,7a-tetrahydro-
Aliphatic halogen	297-78-9	4,7-Methanoisobenzofuran, 1,3,4,5,6,7,8,8-octachloro-1,3,3a,4,7,7a-hexahydro-
Aliphatic halogen	335-57-9	Heptane, hexadecafluoro-
Aliphatic halogen	355-42-0	Hexane, tetradecafluoro-
Aliphatic halogen	355-43-1	Hexane, 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-6-iodo-
Aliphatic halogen	375-72-4	1-Butanesulfonyl fluoride, 1,1,2,2,3,3,4,4,4-nonafluoro-

Aliphatic halogen	423-50-7	1-Hexanesulfonyl fluoride, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-
Aliphatic halogen	559-11-5	2-Propenoic acid, 2,2,3,3,4,4,5,5,6,6,7,
Aliphatic halogen	1715-40-8	Bromocylene
Aliphatic halogen	3389-71-7	Bicyclo[2.2.1]hepta-2,5-diene, 1,2,3,4,7,7-hexachloro-
Aliphatic halogen	26447-49-4	Hexabromododecane
Aliphatic halogen	28680-45-7	Bicyclo[2.2.1]hept-2-ene, heptachloro-
Aliphatic halogen	36861-47-9	Bicyclo(2.2.1)heptan-2-one, 1,7,7-trimethyl-3-[(4-methylphenyl)methylene]-
Aliphatic halogen	63449-39-8	Paraffin waxes and Hydrocarbon waxes, chlorinated
Aliphatic halogen	85535-84-8	Alkanes, C10-13, chloro
Aliphatic halogen	85535-85-9	Alkanes, C14-17, chloro
Alkane	1257-78-9	1,2-Ethanedisulfonic acid, compd. with 2
Alkylphenol	104-40-5	Phenol, 4-nonyl-
Alkylphenol	9016-45-9	Nonylphenolethoxylate
Alkylphenol	11081-15-5	Phenol, isooctyl-
Alkylphenol	25154-52-3	Phenol, nonyl-
Alkylphenol	84852-15-3	Phenol, 4-nonyl-, branched
Alkylphenol	90481-05-3	Phenol, nonyl-, manuf. of, by-products from, high-boiling
Aniline, halogen	95-76-1	3,4-Dichloroaniline
Aromate	440-17-5	10H-Phenothiazine, 10-[3-(4-methyl-1-pip
Aromate	53500-83-7	Oxiranecarboxylic acid, 3-methyl-3-[4-(2-methylpropyl)phenyl]-, 1-methylethyl ester
Aromatic amine	93-46-9	1,4-Benzenediamine, N,N'-di-2-naphthalenyl-
Aromatic amine	135-91-1	Benzenamine, 4,4'-methylenebis[N,N-diethyl-
Aromatic amine	139-60-6	1,4-Benzenediamine, N,N'-bis(1-ethyl-3-methylpentyl)-
Aromatic amine	494-03-1	2-Naphthalenamine, N,N-bis(2-chloroethyl)-
Aromatic amine	793-24-8	1,4-Benzenediamine, N-(1,3-dimethylbutyl)-N'-phenyl-
Aromatic amine	3081-01-4	1,4-Benzenediamine, N-(1,4-dimethylpentyl)-N'-phenyl-
Aromatic amine	3081-14-9	1,4-Benzenediamine, N,N'-bis(1,4-dimethylpentyl)-
Aromatic amine	5285-60-9	Benzenamine, 4,4'-methylenebis[N-(1-methylpropyl)-
Aromatic amine	13680-35-8	Benzenamine, 4,4'-methylenebis[2,6-diethyl-
Aromatic amine	15114-15-5	9,10-Anthracenedione, 4,8-diamino-2-(4-ethoxyphenyl)-1,5-dihydroxy-

Aromatic amine	15233-47-3	1,4-Benzenediamine, N-(1-methylheptyl)-N'-phenyl-
Aromatic amine	29312-59-2	Benzenamine, 4-(2,6-diphenyl-4-pyridinyl)-N,N-dimethyl-
Aromatic amine	64381-97-1	1,4-Benzenediamine, N,N,N'-tris(1-methylpropyl)-
Aromatic amine	74070-46-5	Benzenamine, 2-chloro-6-nitro-3-phenoxy-
Aromatic amine, halogen	527-20-8	Benzenamine, 2,3,4,5,6-pentachloro-
Aromatic amine, halogen	634-83-3	Benzenamine, 2,3,4,5-tetrachloro-
Aromatic amine, halogen	3481-20-7	Benzenamine, 2,3,5,6-tetrachloro-
Aromatic halogen	68-90-6	Benziodarone
Aromatic halogen	632-79-1	1,3-Isobenzofurandione, 4,5,6,7-tetrabromo-
Aromatic halogen	1949-07-1	Dicroden
Aromatic halogen	2277-92-1	Benzamide, 2,3,5-trichloro-N-(3,5-dichlo
Aromatic halogen	6119-92-2	2-Butenoic acid, 2-(1-methylheptyl)-4,6-dinitrophenyl ester
Aromatic halogen	19774-82-4	Methanone, (2-butyl-3-benzofuranyl)[4-[2-(diethylamino)ethoxy]-3,5-diiodophenyl]-, hydrochloride
Aromatic halogen	59447-55-1	2-Propenoic acid, (pentabromophenyl)methyl ester
Aromatic halogen	87237-48-7	Propanoic acid, 2-[4-[[3-chloro-5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]-, 2-ethoxyethyl ester
Benzene	81-15-2	Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl-2,4,6-trinitro-
Benzene	83-66-9	Benzene, 1-(1,1-dimethylethyl)-2-methoxy-4-methyl-3,5-dinitro-
Benzene	98-51-1	Benzene, 1-(1,1-dimethylethyl)-4-methyl-
Benzene	101-81-5	Benzene, 1,1'-methylenebis-
Benzene	121-14-2	Benzene, 1-methyl-2,4-dinitro-
Benzene	1460-02-2	Benzene, 1,3,5-tris(1,1-dimethylethyl)-
Benzene	25321-09-9	Benzene, bis(1-methylethyl)-
Benzene, halog	85-22-3	Benzene, pentabromoethyl-
Benzene, halog	87-61-6	Benzene, 1,2,3-trichloro-
Benzene, halog	87-82-1	Benzene, hexabromo-
Benzene, halog	87-83-2	Benzene, pentabromomethyl-
Benzene, halog	95-94-3	Benzene, 1,2,4,5-tetrachloro-

Benzene, halog	101-76-8	Benzene, 1,1'-methylenebis[4-chloro-
Benzene, halog	108-70-3	Benzene, 1,3,5-trichloro-
Benzene, halog	118-74-1	Benzene, hexachloro-
Benzene, halog	120-82-1	Benzene, 1,2,4-trichloro-
Benzene, halog	133-49-3	Benzenethiol, pentachloro-
Benzene, halog	134-83-8	Benzene, 1-chloro-4-(chlorophenylmethyl)-
Benzene, halog	608-71-9	Phenol, pentabromo-
Benzene, halog	608-93-5	Benzene, pentachloro-
Benzene, halog	634-66-2	Benzene, 1,2,3,4-tetrachloro-
Benzene, halog	634-90-2	Benzene, 1,2,3,5-tetrachloro-
Benzene, halog	1836-77-7	Benzene, 1,3,5-trichloro-2-(4-nitrophenoxy)-
Benzene, halog	3278-89-5	Benzene, 1,3,5-tribromo-2-(2-propenyloxy)-
Benzene, halog	5216-25-1	Benzene, 1-chloro-4-(trichloromethyl)-
Benzene, halog	6936-40-9	Benzene, 1,2,4,5-tetrachloro-3-methoxy-
Benzene, halog	38521-51-6	Benzene, pentabromo(bromomethyl)-
Benzene, halog	41999-84-2	Benzene, 1,4-dichloro-2,5-bis(dichloromethyl)-
Benzene, halog	42074-68-0	Benzene, 1-chloro-2-(chlorodiphenylmethyl)-
Benzene, halogen	21850-44-2	Benzene, 1,1'-(1-methylethylidene)bis[3,5-dibromo-4-(2,3-dibromopropoxy)-
Benzenesulfonic acid	68015-60-1	Benzenesulfonic acid, 2-amino-, (1-methylethylidene)di-4,1-phenylene ester
Biphenyl	29398-96-7	[1,1'-Biphenyl]-4,4'-diamine, N,N'-bis(2,4-dinitrophenyl)-3,3'-dimethoxy-
Biphenyl, halogen	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
Biphenyl, halogen	612-83-9	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-, dihydrochloride
Biphenyl, halogen	41604-19-7	1,1'-Biphenyl, 4-bromo-2-fluoro-
Dioxine	1746-01-6	Dibenzo(b,e)(1,4)dioxin, 2,3,7,8-tetrachloro-
Drug	50-53-3	Chlorpromazine
Drug	50-63-5	1,4-Pentanediamine, N(4)-(7-chloro-4-quinolinyl)-N(1),N(1)-diethyl-, phosphate (1:2)
Drug	54-05-7	1,4-Pentanediamine, N4-(7-chloro-4-quinolinyl)-N1,N1-diethyl-
Drug	58-38-8	Prochloroperazine
Drug	69-23-8	Fluphenazine

Drug	146-56-5	1-Piperazineethanol, 4-[3-[2-(trifluoromethyl)-10H-phenothiazin-10-yl]propyl]-, dihydrochloride
Drug	749-13-3	Trifluperidol
Drug	3759-07-7	10(9H)-Acridinepropanamine, N,N,9,9-tetr
Drug	4394-00-7	Niflumic acid
Drug	4757-55-5	10(9H)-Acridinepropanamine, N,N,9,9-tetramethyl-
Drug	10331-57-4	[1,1'-Biphenyl]-2,2'-diol, 5,5'-dichloro
Drug	22832-87-7	1H-Imidazole, 1-[2-(2,4-dichlorophenyl)-2-[(2,4-dichlorophenyl)methoxy]ethyl]-, mononitrate
Drug	57648-21-2	1-Butanone, 4-[4-(2,3-dihydro-2-thioxo-1
Drug	57808-65-8	Benzamide, N-[5-chloro-4-[(4-chloropheny
Drug	59467-70-8	4H-Imidazo[1,5-a][1,4]benzodiazepine, 8-
Ethanone	32388-55-9	Ethanone, 1-(2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-1H-3a,7-methanoazulen-5-yl)-, [3R-(3alpha,3abeta,7beta,8aalpha)]
Ethanone	57499-57-7	Ethanone, 1-[1,6-dimethyl-4-(4-methyl-3-pentenyl)-3-cyclohexen-1-yl]-
Ethanone	68517-09-9	Ethanone, 1-(2-hydroxy-5-tert-nonylphenyl)-, oxime
Hormone	50-28-2	Oestradiol
Hormone	53-16-7	Oestron
Hormone	56-53-1	Diethylstilbestrol
Hormone	57-63-6	17-Ethynylestradiol
Hormone	72-33-3	Mestranol
Hormone	315-37-7	Androst-4-en-3-one, 17-[(1-oxoheptyl)oxy]-, (17.beta.)-
Hormone	512-04-9	Spirost-5-en-3-ol, (3beta,25R)-
Hormone	630-56-8	Pregn-4-ene-3,20-dione, 17-[(1-oxohexyl)oxy]-
Isocyanate	4098-71-9	Cyclohexane, 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethyl-
Isocyanate	16938-22-0	Hexane, 1,6-diisocyanato-2,2,4-trimethyl-
Isocyanate	26603-40-7	1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris(3-isocyanatomethylphenyl)-
Isocyanate	55525-54-7	Urea, N,N'-bis[(5-isocyanato-1,3,3-trimethylcyclohexyl)methyl]-
Isocyanate	68083-48-7	2-Butanone, O-[[[[1,3,3-trimethyl-5-[[[[(1-methylpropylidene)amino]oxy]carbonyl]amino]cyclohexyl]methyl]amino]carbonyl]oxime
Metal	10108-64-2	Cadmium chloride
Neodecanoic acid	51000-52-3	Neodecanoic acid, ethenyl ester
Octanesulfonamide	1691-99-2	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-
Octanesulfonamide	67969-69-1	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-, diammonium salt
Organolead	75-74-1	Lead, tetramethyl-
Organolead	78-00-2	Lead, tetraethyl-
Organotin	427-45-2	Stannane, fluorotrisp-chlorophenyl-
Organotin	13356-08-6	Distannoxane, hexakis(2-methyl-2-phenylpropyl)-
PAH	50-32-8	Benzo[a]pyrene

PAH	53-70-3	Dibenz[a,h]anthracene
PAH	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
PAH	56-55-3	Benz[a]anthracene
PAH	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
PAH	82-05-3	7H-Benz[de]anthracen-7-one
PAH	83-32-9	Acenaphthylene, 1,2-dihydro-
PAH	91-57-6	Naphthalene, 2-methyl-
PAH	92-24-0	Naphthacene
PAH	116-66-5	1H-Indene, 2,3-dihydro-1,1,3,3,5-pentamethyl-4,6-dinitro-
PAH	120-12-7	Anthracene
PAH	127-25-3	1-Phenanthrenecarboxylic acid, 1,2,3,4,4a,4b,5,6,10,10a-decahydro-1,4a-dimethyl-7-(1-methylethyl)-, methyl ester, [1R-(1.alpha.,4a.beta.,4b.alpha.,10a.alpha.)]-
PAH	127-36-6	1-Phenanthrenemethanol, 1,2,3,4,4a,4b,5,6,7,9,10,10a-dodecahydro-1,4a-dimethyl-7-(1-methylethyl)-
PAH	128-69-8	Perylo[3,4-cd:9,10-c'd']dipyran-1,3,8,10-tetrone
PAH	129-00-0	Pyrene
PAH	132-65-0	Dibenzothiophene
PAH	189-55-9	Benzo[rst]pentaphene
PAH	189-64-0	Dibenzo[b,def]chrysene
PAH	191-07-1	Coronene
PAH	191-24-2	Benzo[ghi]perylene
PAH	191-26-4	Dibenzo[def,mno]chrysene
PAH	191-30-0	Dibenzo[def,p]chrysene
PAH	192-65-4	Naphtho[1,2,3,4-def]chrysene
PAH	192-97-2	Benzo[e]pyrene
PAH	194-59-2	7H-Dibenzo[c,g]carbazole
PAH	195-19-7	Benzo[c]phenanthrene
PAH	198-55-0	Perylene
PAH	206-44-0	Fluoranthene
PAH	207-08-9	Benzo[k]fluoranthene
PAH	215-58-7	Benzo[b]triphenylene
PAH	217-59-4	Triphenylene
PAH	218-01-9	Chrysene
PAH	224-41-9	Dibenz[a,j]anthracene
PAH	239-64-5	13H-Dibenzo[a,i]carbazole
PAH	469-61-4	1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-, [3R-(3alpha,3abeta,7beta,8aalpha)]-
PAH	666-84-2	1-Phenanthrenemethanol, 1,2,3,4,4a,4b,5,6,10,10a-decahydro-1,4a-dimethyl-7-(1-methylethyl)-, [1R-(1.alpha.,4a.beta.,4b.alpha.,10a.alpha.)]-
PAH	1705-85-7	Chrysene, 6-methyl-
PAH	3351-28-8	Chrysene, 1-methyl-
PAH	4051-63-2	[1,1'-Bianthracene]-9,9',10,10'-tetrone, 4,4'-diamino-
PAH	5510-99-6	Phenol, 2,6-bis(1-methylpropyl)-
PAH	5522-43-0	Pyrene, 1-nitro-
PAH	11028-42-5	Cedrene-

PAH	13393-93-6	1-Phenanthrenemethanol, tetradecahydro-1,4a-dimethyl-7-(1-methylethyl)-
PAH	19941-28-7	1-Phenanthrenecarboxylic acid, tetradecahydro-1,4a-dimethyl-7-(1-methylethyl)-, methyl ester, [1R-(1alpha,4abeta,4balpha
PAH	26140-60-3	Terphenyl
PAH	38640-62-9	Naphthalene, bis(1-methylethyl)-
PAH	90640-80-5	Anthracene oil
PAH	90640-81-6	Anthracene oil, anthracene paste
PAH	90640-82-7	Anthracene oil, anthracene-free
PAH	90640-86-1	Distillates, coal tar, heavy oils
PAH	91995-15-2	Anthracene oil, anthracene paste, anthracene fraction
PAH	91995-17-4	Anthracene oil, anthracene paste, distn. lights
PAH	91995-42-5	Distillates (coal tar), heavy oils, pyrene fraction
PAH	91995-52-7	Distillates (coal tar), pitch, pyrene fraction
PAH	92061-94-4	Residues (coal tar), pitch distn.
PAH	101316-50-1	Distillates (petroleum), alkene-alkyne manuf. pyrolysis oil, condensed arom. ring-contg.
PAH, amine	1606-67-3	1-Pyrenamine
PAH, halogen	81-96-9	7H-Benz[de]anthracen-7-one, 3-bromo-
PAH, halogen	81-98-1	7H-Benz[de]anthracen-7-one, 3,9-dibromo-
PAH, halogen	128-63-2	Pyrene, 1,3,6,8-tetrabromo-
PAH, halogen	947-72-8	Phenanthrene, 9-chloro-
PAH, halogen	4378-61-4	Dibenzo[def,mno]chrysene-6,12-dione, 4,10-dibromo-
PBB	92-86-4	1,1'-Biphenyl, 4,4'-dibromo-
PBB	13654-09-6	1,1'-Biphenyl, 2,2',3,3',4,4',5,5',6,6'-decabromo-
PBB	27753-52-2	Nonabromobiphenyl
PBB	27858-07-7	Octabromobiphenyl
PBB	36355-01-8	1,1'-Biphenyl, hexabromo-
PBDE	1163-19-5	Benzene, 1,1'-oxybis[2,3,4,5,6-pentabromo-
PBDE	32534-81-9	Benzene, 1,1'-oxybis-, pentabromo deriv.
PBDE	32536-52-0	Benzene, 1,1'-oxybis-, octabromo deriv.
PCB	1336-36-3	1,1'-Biphenyl, chlorinated
PCB	2050-68-2	1,1'-Biphenyl, 4,4'-dichloro-
PCB	2051-24-3	1,1'-Biphenyl, 2,2',3,3',4,4',5,5',6,6'-decachloro-
PCB	2437-79-8	1,1'-Biphenyl, 2,2',4,4'-tetrachloro-
PCB	7012-37-5	1,1'-Biphenyl, 2,4,4'-trichloro-
PCB	33979-03-2	1,1'-Biphenyl, 2,2',4,4',6,6'-hexachloro-
PCB	53742-07-7	1,1'-Biphenyl, nonachloro-
PCN	1321-64-8	Naphthalene, pentachloro-
PCN	1321-65-9	Naphthalene, trichloro-
PCN	1335-87-1	Naphthalene, hexachloro-
PCN	1335-88-2	Naphthalene, tetrachloro-
PCN	2234-13-1	Naphthalene, octachloro-

PCN	32241-08-0	Naphthalene, heptachloro-
PCN	70776-03-3	Naphthalene, chloro derivs.
PCT	61788-33-8	Terphenyl, chlorinated
Pesticide	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
Pesticide	53-19-0	Benzene, 1-chloro-2-[2,2-dichloro-1-(4-chlorophenyl)ethyl]-
Pesticide	56-35-9	Distannoxane, hexabutyl-
Pesticide	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
Pesticide	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1.alpha.,2.alpha.,3.beta.,4.alpha.,5.alpha.,6.beta.)-
Pesticide	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a.alpha.,2.beta.,2a.alpha.,3.beta.,6.beta.,6a.alpha.,7.beta.,7a.alpha.)-
Pesticide	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a.alpha.,2.beta.,2a.beta.,3.alpha.,6.alpha.,6a.beta.,7.beta.,7a.alpha.)-
Pesticide	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis(4-methoxy-
Pesticide	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
Pesticide	72-55-9	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-
Pesticide	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
Pesticide	76-87-9	Stannane, hydroxytriphenyl-
Pesticide	80-06-8	Benzenemethanol, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.-methyl-
Pesticide	82-68-8	Benzene, pentachloronitro-
Pesticide	87-86-5	Phenol, pentachloro-
Pesticide	93-79-8	Acetic acid, (2,4,5-trichlorophenoxy)-, butyl ester
Pesticide	97-18-7	Phenol, 2,2'-thiobis[4,6-dichloro-
Pesticide	101-20-2	Urea, N-(4-chlorophenyl)-N'-(3,4-dichlorophenyl)-
Pesticide	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
Pesticide	115-32-2	Benzenemethanol, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.-(trichloromethyl)-
Pesticide	116-29-0	Benzene, 1,2,4-trichloro-5-[(4-chlorophenyl)sulfonyl]-
Pesticide	120-39-8	Acetic acid, (2,4,5-trichlorophenoxy)-, pentyl ester
Pesticide	143-50-0	1,3,4-Metheno-2H-cyclobuta(cd)pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-

Pesticide	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1.alpha.,4.alpha.,4a.beta.,5.alpha.,8.alpha.,8a.beta.)-
Pesticide	319-85-7	beta-HCH
Pesticide	327-98-0	Phosphonothioic acid, ethyl-, O-ethyl O-(2,4,5-trichlorophenyl) ester
Pesticide	465-73-6	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1.alpha.,4.alpha.,4a.beta.,5.beta.,8.beta.,8a.beta.)-
Pesticide	475-26-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-fluoro-
Pesticide	485-31-4	2-Butenoic acid, 3-methyl-, 2-(1-methylpropyl)-4,6-dinitrophenyl ester
Pesticide	497-39-2	Phenol, 2,4-bis(1,1-dimethylethyl)-5-methyl-
Pesticide	510-15-6	Benzeneacetic acid, 4-chloro-.alpha.-(4-chlorophenyl)-.alpha.-hydroxy-, ethyl ester
Pesticide	515-69-5	3-Cyclohexene-1-methanol, .alpha.,4-dimethyl-.alpha.-(4-methyl-3-pentenyl)-, (R*,R*)-
Pesticide	563-12-2	Phosphorodithioic acid, S,S'-methylene O,O,O',O'-tetraethyl ester
Pesticide	608-73-1	Cyclohexane, 1,2,3,4,5,6-hexachloro-
Pesticide	668-34-8	Stannylium, triphenyl-
Pesticide	732-26-3	Phenol, 2,4,6-tris(1,1-dimethylethyl)-
Pesticide	786-19-6	Phosphorodithioic acid, S-[[(4-chlorophenyl)thio]methyl] O,O-diethyl ester
Pesticide	789-02-6	Benzene, 1-chloro-2-[2,2,2-trichloro-1-(4-chlorophenyl)ethyl]-
Pesticide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexahydro-, (1a.alpha.,1b.beta.,2.alpha.,5.alpha.,5a.beta.,6.beta.,6a.alpha.)-
Pesticide	1138-52-9	Phenol, 3,5-bis(1,1-dimethylethyl)-
Pesticide	1582-09-8	Benzenamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-
Pesticide	1836-75-5	Benzene, 2,4-dichloro-1-(4-nitrophenoxy)-
Pesticide	1861-40-1	Benzenamine, N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)-
Pesticide	1912-24-9	Atrazine
Pesticide	1928-47-8	Acetic acid, (2,4,5-trichlorophenoxy)-, 2-ethylhexyl ester
Pesticide	2062-78-4	Pimozide
Pesticide	2104-64-5	Phosphonothioic acid, phenyl-, O-ethyl O-(4-nitrophenyl) ester
Pesticide	2104-96-3	Phosphorothioic acid, O-(4-bromo-2,5-dichlorophenyl) O,O-dimethyl ester
Pesticide	2227-13-6	Tetrasul (Animert)
Pesticide	2303-17-5	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester

Pesticide	2385-85-5	1,3,4-Metheno-1H-cyclobuta[cd]pentalene, 1,1a,2,2,3,3a,4,5,5,5a,5b,6-dodecachlorooctahydro-
Pesticide	2545-59-7	Acetic acid, (2,4,5-trichlorophenoxy)-, 2-butoxyethyl ester
Pesticide	2668-47-5	[1,1'-Biphenyl]-4-ol, 3,5-bis(1,1-dimethylethyl)-
Pesticide	2921-88-2	Phosphorothioic acid, O,O-diethyl O-(3,5,6-trichloro-2-pyridyl) ester
Pesticide	3090-36-6	Stannane, tributyl(1-oxododecyl)oxy-
Pesticide	3424-82-6	Benzene, 1-chloro-2-[2,2-dichloro-1-(4-chlorophenyl)ethenyl]-
Pesticide	3734-48-3	4,7-Methano-1H-indene, 4,5,6,7,8,8-hexachloro-3a,4,7,7a-tetrahydro-
Pesticide	3972-13-2	DIDT
Pesticide	4824-78-6	Phosphorothioic acid, O-(4-bromo-2,5-dichlorophenyl) O,O-diethyl ester
Pesticide	7212-44-4	1,6,10-Dodecatrien-3-ol, 3,7,11-trimethyl-
Pesticide	8001-35-2	Toxaphene
Pesticide	8001-50-1	Strobane
Pesticide	8072-20-6	ETHANOL, 1,1-BIS(4-CHLOROPHENYL)-, mixed
Pesticide	13121-70-5	Stannane, tricyclohexylhydroxy-
Pesticide	14816-18-3	3,5-Dioxa-6-aza-4-phosphaoct-6-ene-8-nitrile, 4-ethoxy-7-phenyl-, 4-sulfide
Pesticide	17540-75-9	Phenol, 2,6-bis(1,1-dimethylethyl)-4-(1-methylpropyl)-
Pesticide	18181-70-9	Phosphorothioic acid, O-(2,5-dichloro-4-iodophenyl) O,O-dimethyl ester
Pesticide	19398-13-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-, 2-butoxyethyl ester
Pesticide	19666-30-9	1,3,4-Oxadiazol-2(3H)-one, 3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-
Pesticide	21609-90-5	Phosphonothioic acid, phenyl-, O-(4-bromo-2,5-dichlorophenyl) O-methyl ester
Pesticide	22916-47-8	1H-Imidazole, 1-[2-(2,4-dichlorophenyl)-2-[(2,4-dichlorophenyl)methoxy]ethyl]-
Pesticide	23593-75-1	1H-Imidazole, 1-[(2-chlorophenyl)diphenylmethyl]-
Pesticide	25168-15-4	Acetic acid, (2,4,5-trichlorophenoxy)-, isooctyl ester
Pesticide	25428-43-7	3-Cyclohexene-1-methanol, .alpha.,4-dimethyl-.alpha.-(4-methyl-3-pentenyl)-, (R*,R*)-(.+-.)-
Pesticide	26399-36-0	Benzenamine, N-(cyclopropylmethyl)-2,6-dinitro-N-propyl-4-(trifluoromethyl)-
Pesticide	26864-56-2	4-Piperidinol, 1-[4,4-bis(4-fluorophenyl
Pesticide	26999-29-1	Phosphorodithioic acid, O,O-diisooctyl ester
Pesticide	28772-56-7	2H-1-Benzopyran-2-one, 3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxy-
Pesticide	29098-15-5	Benzoic acid, 2-[(2,6-dichloro-3-methylp
Pesticide	36065-30-2	Benzene, 1,3,5-tribromo-2-(2,3-dibromo-2-methylpropoxy)-
Pesticide	37893-02-0	Benzenamine, N-[3-phenyl-4,5-bis[(trifluoromethyl)imino]-2-thiazolidinylidene]-

Pesticide	39300-45-3	2-Butenoic acid, 2(or 4)-isooctyl-4,6(or 2,6)-dinitrophenyl ester
Pesticide	40487-42-1	Benzenamine, N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitro-
Pesticide	42576-02-3	Benzoic acid, 5-(2,4-dichlorophenoxy)-2-nitro-, methyl ester
Pesticide	50471-44-8	2,4-Oxazolidinedione, 3-(3,5-dichlorophenyl)-5-ethenyl-5-methyl-
Pesticide	51630-58-1	Benzeneacetic acid, 4-chloro-.alpha.-(1-methylethyl)-, cyano (3-phenoxyphenyl)methyl ester
Pesticide	51775-36-1	2,2,5-endo,6-exo,8,9,10-heptachloronorbornane
Pesticide	52468-60-7	Sibelium
Pesticide	52888-80-9	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
Pesticide	56296-78-7	Benzenepropanamine, N-methyl-.gamma.-[4-(trifluoromethyl)phenoxy]-, hydrochloride
Pesticide	57018-04-9	Phosphorothioic acid, O-(2,6-dichloro-4-methylphenyl) O,O-dimethyl ester
Pesticide	57966-95-7	Acetamide, 2-cyano-N-[(ethylamino)carbonyl]-2-(methoxyimino)-
Pesticide	58138-08-2	Oxirane, 2-(3,5-dichlorophenyl)-2-(2,2,2-trichloroethyl)-
Pesticide	62199-62-6	Heptane, 2,2,4,4,6-pentamethyl-
Pesticide	64131-85-7	Phosphorothioic acid, O,O,O-tris(4-nitrophenyl) ester
Pesticide	65925-28-2	Benzene, 1-[2-(2-chloroethoxy)ethoxy]-4-(1,1,3,3-tetramethylbutyl)-
Pesticide	66230-04-4	Benzeneacetic acid, 4-chloro-.alpha.-(1-methylethyl)-, cyano(3-phenoxyphenyl)methyl ester, [S-(R*,R*)]-
Pesticide	67306-03-0	Morpholine, 4-[3-[4-(1,1-dimethylethyl)phenyl]-2-methylpropyl]-2,6-dimethyl-
Pesticide	67485-29-4	Hydramethylnon
Pesticide	69898-41-5	Furo[3,4-b]pyridin-7(5H)-one, 5-[4-(diethylamino)-2-ethoxyphenyl]-5-(1-ethyl-2-methyl-1H-indol-3-yl)-
Pesticide	70124-77-5	Benzeneacetic acid, 4-(difluoromethoxy)-.alpha.-(1-methylethyl)-, cyano(3-phenoxyphenyl)methyl ester
Pesticide	81412-43-3	Morpholine, 2,6-dimethyl-4-(C10-13)-alkyl-
Pesticide	85409-17-2	Stannane, tributyl-, mono(naphthenoyloxy) derivs.
Pesticide	85509-19-9	Flusilazole
Pesticide	111479-05-1	Propaquizafop
Phenol	79-74-3	1,4-Benzenediol, 2,5-bis(1,1-dimethylpropyl)-
Phenol	80-05-7	4,4'-Methylethylidenebisphenol
Phenol	98-54-4	Butylphenol
Phenol	120-95-6	Phenol, 2,4-bis(1,1-dimethylpropyl)-
Phenol	140-66-9	Phenol, 4-(1,1,3,3-tetramethylbutyl)-
Phenol	3147-75-9	Phenol, 2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)-

Phenol	3846-71-7	Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)-
Phenol	21150-89-0	Phenol, 4-(1,1-dimethylethyl)-, hydrogen phosphate
Phenol	25013-16-5	Butylhydroxyanisol
Phenol	25973-55-1	Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylpropyl)-
Phenol	50849-47-3	Benzaldehyde, 2-hydroxy-5-nonyl-, oxime
Phenol, halogen	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
Phenol, halogen	79-94-7	Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo-
Phenol, halogen	79-95-8	Phenol, 4,4'-(1-methylethylidene)bis[2,6-dichloro-
Phenol, halogen	95-95-4	Phenol, 2,4,5-trichloro-
Phenol, halogen	1825-21-4	Pentachloroanisole
Phenol, halogen	1940-43-8	Phenol, 2,2'-methylenebis[4,6-dichloro-
Phenol, halogen	39489-75-3	Phenol, 2,4-dichloro-5-nitro-, carbonate (2:1) (ester)
Phenoxy acid	52179-28-9	Propanoic acid, 2-[4-(2,2-dichlorocyclopropyl)phenoxy]-2-methyl-, ethyl ester
Phosphine	603-35-0	Phosphine, triphenyl-
Phosphoric acid	1241-94-7	Phosphoric acid, 2-ethylhexyl diphenyl ester
Phosphoric acid	1330-78-5	Phosphoric acid, tris(methylphenyl) ester
Phosphoric acid	29761-21-5	Phosphoric acid, isodecyl diphenyl ester
Phthalate	84-69-5	1,2-Benzenedicarboxylic acid, bis(2-methylpropyl) ester
Phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
Phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester
Phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
Phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
Phthalate	27554-26-3	1,2-Benzenedicarboxylic acid, diisooctyl ester
Phthalate	28553-12-0	1,2-Benzenedicarboxylic acid, diisononyl ester
Phthalate	68515-48-0	1,2-Benzenedicarboxylic acid, di-C8-10-alkyl esters, branched
Pigment	128-83-6	9,10-Anthracenedione, 1-amino-2-bromo-4-[(4-methylphenyl)amino]-
Pigment	129-73-7	Benzenamine, 4,4'-(phenylmethylene)bis[N,N-dimethyl-

Pigment	7139-02-8	Pyrimido[5,4-d]pyrimidine, 2,6-dichloro-4,8-di-1-piperidinyl-
Pigment	17354-14-2	9,10-Anthracenedione, 1,4-bis(butylamino)-
Pigment	52740-90-6	2-Anthracenecarboxamide, 1-amino-N-(3-bromo-9,10-dihydro-9,10-dioxo-2-anthracenyl)-9,10-dihydro-9,10-dioxo-
Pigment	65294-17-9	Methylium, tris[4-(dimethylamino)phenyl]-, salt with 3-[[4-(phenylamino)phenyl]azo]benzenesulfonic acid (1:1)
Pigment	68844-77-9	Astemizole
Pyretreid	39515-41-8	Cyclopropanecarboxylic acid, 2,2,3,3-tetramethyl-, cyano(3-phenoxyphenyl)methyl ester
Pyretreid	52315-07-8	Cyclopropanecarboxylic acid, 3-(2,2-dichloroethenyl)-2,2-dimethyl-, cyano(3-phenoxyphenyl)methyl ester
Pyretreid	52645-53-1	Cyclopropanecarboxylic acid, 3-(2,2-dichloroethenyl)-2,2-dimethyl-, (3-phenoxyphenyl)methyl ester
Pyretreid	52918-63-5	Cyclopropanecarboxylic acid, 3-(2,2-dibromoethenyl)-2,2-dimethyl-, cyano(3-phenoxyphenyl)methyl ester, [1R-[1.alpha.(S*),3.alpha.]]-
Pyretreid	64257-84-7	Cyclopropanecarboxylic acid, 2,2,3,3,-tetramethyl-, cyano(3-phenoxyphenol)methyl ester, (.+-.)-
Pyretreid	67375-30-8	Cyclopropanecarboxylic acid, 3-(2,2-dichloroethenyl)-2,2-dimethyl-, cyano(3-phenoxyphenyl)methyl ester, [1-alpha.(S*),3.alpha.]-(.+-.)-
Pyretreid	68085-85-8	Cyclopropanecarboxylic acid, 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-, cyano(3-phenoxyphenyl)methyl ester
Pyretreid	68359-37-5	Cyclopropanecarboxylic acid, 3-(2,2-dichloroethenyl)-2,2-dimethyl-, cyano(4-fluoro-3-phenoxyphenyl)methyl ester
Pyretreid	118712-89-3	Cyclopropanecarboxylic acid, 3-(2,2-dichloroethenyl)-2,2-dimethyl-, (2,3,5,6-tetrafluorophenyl)methyl ester, (1R-trans)-
Silane	18379-25-4	Silane, trichloro(2,4,4-trimethylpentyl)-
Siloxane	107-46-0	Disiloxane, hexamethyl-
Triazine	52434-90-9	1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris(2,3-dibromopropyl)-
	10457-90-6	Bromperidol