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**Nomenclature for Solvent
Production and Use**

Documents

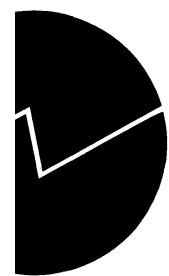


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Introduction

The aim of this work is to review the current emission nomenclature concerning solvent production and use and to suggest changes where appropriate in order to make the nomenclature compatible with basic statistical standards.

Use of solvents is an important source of pollution of NMVOCs (non-methane volatile organic compounds) as well as POPs (persistent organic pollutants) on an European scale. In this view, a good nomenclature should be useful for bookkeeping and presenting emissions. A good emission nomenclature should be a link between statistical input data used to estimate the emissions from national statistics and the output data to be used for protocol reporting, give links to economic models as well as several other applications. The NMVOCs are of interest for photochemical ozone formation. They are composed of several sub-components with a variable potential for ozone formation. NMVOCs may also be toxic. The POPs are of interest due to toxicity. Several countries have signed protocols under the ECE Convention on Long Range Transport with obligations or reduce the emissions of NMVOC and POPs. Consequently a system for consistent estimation and reporting of these is important. The ECE has together with EEA produced guidelines for emission estimation for all emission sources given by SNAP category, the Emission Inventory Guidebook (Mc Innes 1996).

The word “solvent” is used here also in cases where NMVOC or a POP is used as a product additive and emitted to air, though not as a solvent in a strict sense. We have also included sources of greenhouse gas emissions of HFC (fluorinated hydrocarbons) and SF₆ used in products. There are also several other emission sources (of particularly heavy metals and POPs) connected to product use which nomenclature might be developed based on the ideas in this report.

The origin of today’s solvent nomenclature is SNAP (Selected Nomenclature for Air Pollution) (SNAP 1997). SNAP has been further developed to NOSE (Nomenclature for Sources of Emissions), which also has a link to NACE (NOSE 1997). NACE (NACE rev 1) is the standard for economic sector classification in Europe. The NOSE manual gives some ideas about the correspondence between SNAP and NACE and suggests transformation methodologies. However, in many respects it can be argued that a transformation from SNAP to NACE is artificial as the basic statistical input data most frequently are defined by NACE from the beginning. In this report we will suggest a way to overcome this problem.

The first part of this report presents the solvent relevant part of SNAP-97. In chapter 2 we present elements of basic statistical standards relevant for solvent production and use. Finally, in chapter 3 the experiences in chapter 1 and 2 are used to suggest an alternative nomenclature for emissions from solvent use and production. This report does not rise the problem of possible implementation of an alternative nomenclature.

1. Current solvent nomenclature in SNAP

The suggested NOSE nomenclature for solvent production and use is based on the SNAP nomenclature. SNAP has been gradually developed the last 10 years and has been slightly changed several times in order to add new emission sources or to harmonise with other inventory nomenclatures (particulary the IPCC inventory of greenhouse gases).

In SNAP the emission sources are grouped into 11 categories;

1. Combustion in energy and transformation industries
2. Non-industrial combustion plants
3. Combustion in manufacturing industry
4. Production processes
5. Extraction and distribution of fossil fuels and geothermal energy
6. Solvent and other product use
7. Road transport
8. Other mobile sources and machinery
9. Waste treatment and disposal
10. Agriculture
11. Other sources and sinks (natural sources and land use change and forestry)

Within each category there are possibilities for splits into two more levels. The relevant SNAP codes for production and use of solvents and related products are listed in table 1. As seen, there is a large number of codes relevant for solvent production and use, covered under two main SNAP headings, 04 *Industrial processes* and 06 *Solvent use*.

There are several pollutants included in the current Corinair system relevant for solvent use, these are NMVOC and POPs (TCM (tetrachloromethane), TRI (trichloroethylene), PER (tetrachloroethylene) and TCE. Also the POPs PAH (Polycyclic Aromatic Hydrocarbons), TCB (trichlorobenzene) and HCH (hexachlorocyclohexane) as well as the greenhouse gases HFCs and SF₆ may be considered as relevant in this context, though they are not solvents but volatile product additives for other applications. However, there are more solvents which may be included in other inventories and registers. Pollutant nomenclatures will not be discussed in this report.

Table 1. SNAP categories relevant to solvent use. SNAP-97.

SNAP	Title	SNAP	Title
04	<i>Production processes</i>	0603	<i>Chemical products manufacturing or processing</i>
0401	<i>Processes in petroleum industries</i>	060301	Polyester processing
040101	Petroleum products processing	060302	Polyvinylchloride processing
040104	Storage and handling of petroleum products in refinery	060303	Polyurethane processing
0405	<i>Processes in organic chemical industries (bulk production)</i>	060304	Polystyrene foam processing
040503	1,2 dichloroethane	060305	Rubber processing
040510	Styrene	060306	Pharmaceutical products manufacturing
040511	Polystyrene	060307	Paints manufacturing
040518	Ethylbenzene	060308	Inks manufacturing
040522	Storage and handling of organic chemical products	060309	Glues manufacturing
040525	Pesticide production	060311	Adhesive, magnetic tapes, films and photographs manufacturing
040526	Production of persistent organic compounds	060312	Textile finishing
040527	Other	060313	Leather tanning
0406	<i>Processes in wood paper pulp, food and drink industries and other industries</i>	060314	Other
040601	Chipboard	0604	<i>Other use of solvents and related activities</i>
040602-04	Paper pulp	060401	Glass wool enduction
040610	Asphalt roofing materials	060402	Mineral wool enduction
040611	Road paving with asphalt	060403	Printing industry
040617	Other	060404	Fat, edible and non edible oil extraction
0408	<i>Production of halocarbons and SF₆</i>	060405	Application of glues and adhesives
040801	Halogenated hydrocarbons production - By products	060406	Preservation of wood
040802	Halogenated hydrocarbons production - Fugitive	060407	Underseal treatment and conservation of vehicles
040803	Halogenated hydrocarbons production - Other	060408	Domestic solvent use (other than paint application)
06	<i>Solvent and other product use</i>	060409	Vehicles devaxing
0601	<i>Paint application</i>	060411	Domestic use of pharmaceutical products
060101	Paint application: manufacture of automobiles	060412	Other (preservation of seeds...)
060102	Paint application: car repairing	0605	<i>Use of HFC, N₂O, NH₃, PFC and SF₆</i>
060103	Paint application: construction and buildings (except 060107)	060501	Anaesthesia
060104	Paint application: domestic use (except 060107)	060502	Refrigeration and air conditioning using halocarbons
060105	Paint application: coil coating	060503	Refrigeration and air conditioning using other products than halocarbons
060106	Paint application: boat building	060504	Foam blowing (except 060304)
060107	Paint application: wood	060505	Fire extinguishers
060108	Other industrial paint application	060506	Aerosols cans
060109	Other non industrial paint application	060507	Electrical equipment
0602	<i>Degreasing, dry cleaning and electronics</i>	060508	Other
060201	Metal degreasing		
060202	Dry cleaning		
060203	Electronic components manufacturing		
060204	Other industrial cleaning		

As mentioned, the emission inventory Guidebook gives guidelines on how to estimate emissions. In many cases more than one methodology is suggested. We shall not give any details here, but the determination method is relevant for the nomenclature as it should have reference to the classification of basic statistical data.

The main estimation methods are:

- Direct measurements: Only possible for emissions from large plants. In general, direct measurements are not useful for solvent emissions as the emissions frequently originate from a number of smaller emission sources. The emissions will be given per plant which may be connected directly to branch. Connection to product may be less straightforward if emissions originate from more than one product.
- Estimation from *emission factors * activity rate*: This methodology is applicable for most emission sources. However, types of solvents used and possible abatement technology in use may be difficult to generalise and express as emission factors. The activity rate may be a production level, amount used of a product, number of inhabitants or employees etc. Emissions are often defined per SNAP, and sometimes per sector or product which might be connected to NACE and PRODCOM, respectively.
- Mass balance methodologies: To determine the total use of a solvent or a product from *production - export + import-destruction*. This methodology may be the most accurate way to determine a solvent emission for a product (defined by e.g. PRODCOM), but the accurate allocation to a SNAP or NACE code is not always straight forward.

The methodologies sketched above are partly alternatives, but they are also complimentary; they may be combined or be used to verify each other.

The ultimate goal of a statistical well defined emission source is to have the possibility to list for a given pollutant emissions

- per *sector* defined by NACE
- by *product* defined by CPA/HS/PRODCOM
which also unambiguously may be connected to
- a *source* defined by SNAP/NOSE.

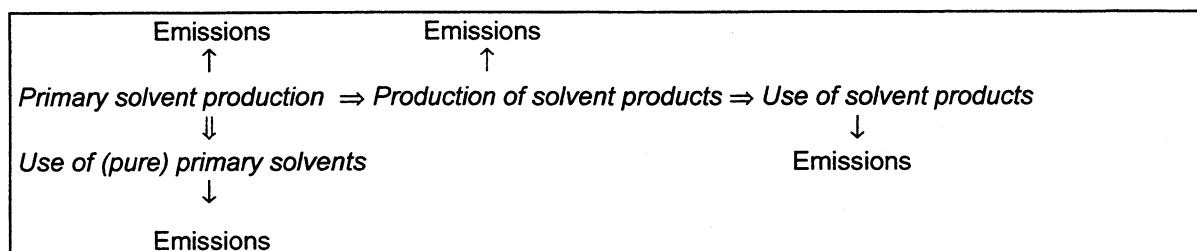
In this way each emission source will be listed once and only once, and each will be linked to basic statistical classifications.

The current SNAP nomenclature in table 1 has references to both sectors (e.g. chemical products manufacturing), processes (e.g. metal degreasing) and use of product (e.g. paint application). Some categories are partly overlapping like 060106 "Paint application: boat building" and 060107 "Paint application: wood" or 060405 "Application of glues and adhesives" and 040601 "Chipboard". One problem with this system is that it does not give any possibility to check the completeness of a solvent inventory, neither with respect to double counted nor non counted emissions. Furthermore, the classification does not allow neither input data nor output to be directly connected to NACE or PRODCOM as desired. Also a new emission source to include will often imply a new SNAP code to be constructed.

2. Review of relevant basic statistical nomenclatures

A nomenclature should be flexible and complete. This means that all known relevant sources should be included and that it should be easy to make changes and additions in the system if a new source becomes relevant.

Emissions take place during solvent production, storage, transport and use. It will probably only be relevant to consider production and use here. Emissions from production and use are connected to both pure solvents and composite products containing smaller or larger amounts of solvents.



Primary bulk solvents are produced in a refinery or in the petrochemical industry. Some of this is used as it is, but some is used as a raw material in the production of composite solvent products, like mixed solvents, paints, glues etc. Some “solvents” are also used as feedstock for production of non-solvent containing products, e.g. plastics. Emissions will take place during production of primary solvents, composite solvent products, as well as during use of pure solvents and solvent products.

Consequently, seen as a mass flow, the point of emissions may be classified according to production or use of commodity or product X_i in branch Y_i . The output from one process may be input to another process or be consumed.

While use of solvents in principle takes place in all branches, production of solvents takes place only in a few. In a nomenclature like NOSE it is important to build an emissions nomenclature on existing statistical standards. The EU standard for branches is NACE and for commodities PRODCOM. In table 2, we have listed the NACE codes most relevant for *production* of solvents and solvent products. In table 3 we have distinguished the main NACEs relevant for *use* of solvents, though use of solvents will take place in most NACE branches.

Individual chemical substances are classified in the CAS-system (Chemical Abstract Services) administered by the American Chemical Society. The CAS classification seems too detailed in a solvent nomenclature and cannot be extended to composite products as desired. The United Nation classification of commodities is HS, Harmonised system, a 6 digit system with further possibilities for national details. This system is frequently used for foreign trade statistics. The European Union commodity classification for industrial production (and industrial services) is called PRODCOM. CPA is the EU recommended general system of classification of commodities and services used in the National accounts. Both HS and CPA are for the industry, with a few exceptions, either similar to PRODCOM or may be aggregated to and from PRODCOM, respectively. This implies that CPA generally is less detailed than PRODCOM while HS generally is more detailed than both. The PRODCOM classification seems most relevant to use here as it has an appropriate level of detail and is directly linked to industry production statistics. The PRODCOM codes for products relevant for solvent production and use and related activities are shown in table 4. For refineries, the PRODCOM classification has not been settled. The codes given are a suggestion from Eurostat (D3/PRODCOM/98/14).

Table 2. Branches (NACE) relevant for *production* of pure solvents (P) and solvent products (C)

NACE	Title	
23	<i>Manufacture of coke, refined petroleum products and nuclear fuel</i>	P
23.2	<i>Manufacture of refined petroleum products</i>	P
24	<i>Manufacture of chemicals and chemical products</i>	P, C
24.1	<i>Manufacture of basic chemicals</i>	P
24.14	Manufacture of other organic basic chemicals	P
24.2	<i>Manufacture of pesticides and other agro-chemical products</i>	C
24.3	<i>Manufacture of paints, varnishes and similar coatings, printing inks and mastics</i>	C
24.4	<i>Manufacture of pharmaceuticals, medicinal chemicals and botanical products</i>	C
24.42	Manufacture of basic pharmaceutical products	C
24.5	<i>Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations</i>	C
24.51	Manufacture of soap and detergents, cleaning and polishing preparations	C
24.52	Manufacture of perfumes and toilet preparations	C
24.6	<i>Manufacture of other chemical products (incl. glue)</i>	C
24.62	Manufacture of glue and gelatine	C
24.64	Manufacture of photographic chemical material	C
24.66	Manufacture of other chemical material n.e.c.	C

Table 3. Branches (NACE) most relevant (in italics) for *end use* of pure solvents and solvent products. Two digit level.

NACE	Title
01	Agriculture, hunting
02	Forestry, logging
05	Fishing
10	Mining of coal and lignite; extraction of peat
11	Extraction of crude petroleum and natural gas
13	Mining of metal ores
14	Other mining and quarrying
15	Manufacture of food products and beverages
16	Manufacture of tobacco products
17	<i>Manufacture of textiles</i>
18	<i>Manufacture of wearing apparel; dressing and dyeing of fur</i>
19	<i>Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear</i>
20	<i>Manufacture of wood and products of wood and cork, except furniture;</i>
21	Manufacture of pulp, paper and paper products
22	<i>Publishing, printing and production of recorded media</i>
23	Manufacture of coke, refined petroleum products and nuclear fuel
24	<i>Manufacture of chemicals and chemical products</i>
25	<i>Manufacture of rubber and plastic products</i>
26	Manufacture of other non-metallic mineral products
27	Manufacture of basic metals
28	<i>Manufacture of fabricated metal products, except machinery and equipment</i>
29	<i>Manufacture of machinery and equipment</i>
30	<i>Manufacture of office machinery and computers</i>
31	<i>Manufacture of electrical machinery and apparatus</i>
32	<i>Manufacture of radio, televisions and communication equipment and apparatus</i>
33	<i>Manufacture of medical, precision and optical instruments, watches and clocks</i>
34	<i>Manufacture of motor vehicles, trailers and semi-trailers</i>
35	<i>Manufacture of other transport equipment (includes oil platforms and ships)</i>
36	<i>Manufacture of furniture</i>
37	Recycling
40	Electricity, gas, steam and hot water supply
41	Collection, purification and distribution of water
45	<i>Construction</i>
50	<i>Sale, maintenance and repair of motor vehicles; retail sale of automotive fuel.</i>
51	Wholesale trade and commission trade, except motor vehicles and motorcycles
52	Retail trade, except motor vehicles and motorcycles; repair of personal and household goods
55	Hotels and restaurants
60	<i>Land transport; transport via pipelines</i>
61	<i>Water transport</i>
62	<i>Air transport</i>
63	Supporting and auxiliary transport activities; activities of travel agencies
64	Post and telecommunications
65	Financial intermediation, except insurance and pension funding
66	Insurance and pension funding, except compulsory social security
67	Activities auxiliary to financial intermediation, except insurance and pension funding
70	Real estate activities
71	Renting of machinery and equipment without operator and of personal and household goods
72	Computer and related activities
73	<i>Research and development</i>
74	Other business activities (74.7 Industrial cleaning, 74.81 Photographic activities)
75	Public administration and defence; compulsory social security
80	Education
85	<i>Health and social work</i>
90	Sewage and refuse disposal, sanitation and similar activities
92	Recreational, cultural and sporting activities
93	<i>Other service activities (93.01 Washing and dry-cleaning of textile and fur products, 93.02 Hairdressing and other beauty treatment)</i>
<i>Private</i>	<i>Households</i>

Table 4. Products (PRODCOM) containing solvents and related pollutants

PRODCOM	Title
23.10	<i>Coke oven products</i>
23.10.20.00	Tar
23.20	<i>Refinery products</i>
23.20.13.50	Naphtha
23.20.13.70	White spirit, industrial spirit
24.12	<i>Dyes and pigments</i>
24.12.21	<i>Dyes</i>
24.12.21.10	Disperse dyes and preparations based thereon
24.13	<i>Other inorganic chemicals</i>
24.13.12	<i>Halogen compounds of non metals</i>
24.13.12.37	Halogenides of non metals, except chlorides and oxochlorides
24.14	<i>Organic base chemicals</i>
24.14.12	<i>Hydrocarbons</i>
24.14.12.13	Cyclohexane
24.14.12.23	Benzene
24.14.12.25	Toluene
24.14.12.43	o-Xylene
24.14.12.45	p-Xylene
24.14.12.47	m-Xylene and mixed xylene isomers
24.14.12.50	Styrene
24.14.12.60	Ethylbenzene
24.14.12.70	Cumene
24.14.13	<i>Chlorinated hydrocarbons</i>
24.14.13.15	Dichloromethane (methylene chloride)
24.14.13.23	Chloroform (trichloromethane)
24.14.13.23	Carbon tetrachloride
24.14.13.53	1,2-Dichloroethane (ethylene dichloride)
24.14.13.55	1,2-Dichloropropane (propylene dichloride) and dichlorobutanes
24.14.13.59	Saturated chlorinated derivatives of acyclic hydrocarbones n.e.c.
24.14.13.73	Trichloroethylene
24.14.13.75	Tetrachloroethylene (perchloroethylene)
24.14.13.79	Unsaturated chlorinated derivatives of acyclic hydrocarbons
24.14.15	<i>Halogenated hydrocarbons (other than chlorinated)</i>
24.14.15.10	Fluorinated; brominated or iodinated derivatives of acyclic hydrocarbons
24.14.15.30	Halogenated derivatives of acyclic hydrocarbons containing 2 or more different halogens
24.14.15.53	1,2,3,4,5,6-Hexachlorocyclohexane (lindane)
24.14.15.73	Chlorobenzene; o-dichlorobenzene and p-chlorobenzene
24.14.15.75	Hexachlorobenzene (HCB) and DDT
24.14.15.79	Halogenated derivatives of aromatic hydrocarbons n.e.c.
24.14.22	<i>Alcohols (mono)</i>
24.14.22.10	Methanol
24.14.22.20	Propan-1-ol (propyl alcohol) and propan-2-ol (isopropyl alcohol)
24.14.22.30	Butan-1-ol (n-butyl alcohol)
24.14.22.40	Butanols (other)
24.14.22.50	Pentanol (amyl alcohol)
24.14.22.73	Acyclic terpene alcohols
24.14.22.75	Allyl alcohol and other unsaturated monohydric alcohols
24.14.23	<i>Poly alcohols</i>
24.14.23.10	Ethylene glycol
24.14.23.20	Propylene glycol
24.14.23.39	Diols and polyhydric alcohols
24.14.23.75	Aromatic alcohols and their halogenated; sulphonated; nitrated or nitrosated derivatives
24.14.32	<i>Esters</i>
24.14.32.15	Ethyl acetate
24.14.32.17	Vinyl acetate
24.14.32.19	Esters of acetic acid (other)
24.14.61	<i>Aldehyds</i>
24.14.61.11	Methanal (formaldehyde)
24.14.62	<i>Ketones</i>
24.14.62.11	Acetone
24.14.62.13	Butanone
24.14.62.13	Butanone (methyl ethyl ketone)
24.14.62.15	4-Methylpentan-2-one (methyl isobutyl ketone)
24.16.62.33	Cyclohexanone and methylcyclohexanone
24.14.63	<i>Ethers</i>
24.14.63.13	Diethyl ether
24.14.63.19	Acyclic ethers and their halogenated; sulphonated; nitrated or nitrosated derivatives
24.14.63.23	Cyclanic; cyclinic or cycloterpenic ethers and their halogenated; sulphonated; nitrated or nitrosated derivatives

24.14.63.25	Aromatic ethers and their halogenated; sulphonated; nitrated or nitrosated derivatives
24.14.63.33	2,2-Oxydiethanol (diethylene glycol; dogol)
24.14.63.39	Ether-alcohols and their halogenated; sulphonated; nitrated or nitrosated derivatives
24.14.63.60	Alcohol; ether and ketone peroxides and their halogenated; sulphonated; nitrated or nitrosated derivatives
24.14.63.73	Oxirane (ethylene oxide)
24.14.63.75	Methyl oxirane
24.14.63.79	Other epoxides, epoxyalcohols, epoxyphenols, epoxyethers
24.14.63.80	Acetals and hemiacetals and their halogenated; sulphonated; nitrated or nitrosated derivatives
24.14.64.30	<i>Other organic compounds n.e.c.</i>
24.14.71	<i>Vegetabile products</i>
24.14.71.70	Wood tar; wood tar oils; wood creosote; wood naphtha; vegetable pitch; brewer's pitch and similar preparations based on rosin; resin acids or on vegetable pitch
24.14.73	<i>Oils and distillates from coal</i>
24.14.73.20	Benzole
24.14.73.30	Toluole and xylole
24.14.73.65	Creosote oils
24.20	Pesticides
24.20.11	Insecticides (further detail possible)
24.20.12	Herbicides (further detail possible)
24.20.14	Disinfectants (further detail possible)
24.20.15	Fungicides (further detail possible)
24.3	Paints, varnishes and similar coatings, printing and mastics
24.30.11	Paints and varnishes dissolved in aqueous medium (further detail possible)
24.30.12	Paints and varnishes dissolved in organic solvents (further detail possible)
24.30.22	Other paints and varnishes (further detail possible)
24.30.24	Printing inks (further detail possible)
24.42	<i>Pharmaceutical products (split)</i>
24.51	<i>Soap and detergents and polishes</i>
24.51.41	Room perfume
24.51.43	Polishes (footwear, furniture and cars) (further detail possible)
24.52	<i>Perfumes and toilet preparations</i>
24.52.11	Perfumes and toilet water (further detail possible)
24.52.12	Make up (further detail possible)
24.52.16.70	Hair lacquers
24.52.19.30	Pre-shave and after shave preparations
24.52.19.50	Personal deodorants and anti-perspirants
24.52.19.90	Other personal preparations
24.60	Other chemical products
24.62.10	<i>Glues</i>
24.62.10.70	Products as glues and adhesives (< 1 kg)
24.62.10.80	Adhesives based on rubber or plastic (> 1 kg)
24.62.10.90	Prepared glues and other prepared adhesives nec
24.64.12.00	Chemical preparations for photographic uses
24.66	Other chemical products
24.66.32	<i>Deefrezer and antifreeze</i>
24.66.33.50	Anti freezing preparations and prepared de-icing fluids
24.66.33.55	Anti freezing preparations
24.66.33.57	Other liquid prepared for de-icing
24.66.4	<i>Miscellaneous chemical products</i>
24.66.42.50	Preparations and chargers for fire-extinguishers
24.66.45.71	Washing and cleaning preparations
24.66.45.90	Finishing agents, dye carriers and other preparations nec
24.66.48.63	Products and preparations for pharmaceutical or surgical uses
24.66.48.73	Mixtures containing acyclic hydrocarbons perhalogenated only with fluorine and chlorine
24.66.48.79	Mixtures containing perhalogenated derivatives of acyclic hydrocarbons containing two or more different halogens
24.66.48.90	Chemical products; preparations and residual products of the chemical or allied industry

The term PRODCOM will be used both for processes, input and output. These are in this report distinguished by PRODCOM1, PRODCOM2 and PRODCOM3, respectively.

The link between SNAP and NACE is shown in table 5. Several SNAP codes cover more than one NACE category.

The link between SNAP and PRODCOM (table 6) shows that there are several PRODCOM codes per SNAP. We have here only included the product containing solvent (or another related pollutant), that means the product which generates the pollutants considered in this context. Other PRODCOM codes

may be relevant considering other pollutants. In some cases the PRODCOM code given is the product, in other cases it is the feedstock and sometimes it is a commodity used as a help agent during the process. The table should be interpreted as an example, there may be emission generated products used in a process without indication in the table.

Table 5. Link between SNAP and NACE

SNAP	NACE	SNAP	NACE
<i>04</i>	<i>23.2</i>	<i>0602</i>	
<i>0401</i>	<i>23.2</i>	060201	28-35
040101	23.2	060202	93
040104	23.2	060203	30-33
<i>0405</i>	<i>24.1</i>	060204	11-37
040503	24.1	<i>0603</i>	
040510	24.1	060301	25
040511	24.1	060302	25
040517	24.1	060303	25
040518	24.1	060304	25
040522	24.1	060305	25
040525	24.2	060306	24.4
040526	24.1	060307	24.3
040527	24.1	060308	24.3
<i>0406</i>		060309	24.62
040601	20	060311	24.3, 24.64, 24.66
040602-04	21	060312	17
040610	26	060313	18, 19
040611	45	060314	-
040617	-	<i>0604</i>	
<i>0408</i>	<i>24.1</i>	060401	26
040801	24.1	060402	26
040802	24.1	060403	22
040803	24.1	060404	15
<i>06</i>		060405	All, mainly 17-20, 25, 36, 45, private
<i>0601</i>		060406	20, maybe also 36 and 45
060101	34	060407	50
060102	50	060408	Private
060103	45	060409	50
060104	Private	060411	Private
060105	27	060412	01, all esp. 73, 85, 60-62
060106	35	<i>0605</i>	
060107	01-05, 20, 36, 45, private	060501	85
060108	10-36, mainly 35, 36	060502	Several, esp. 05, 15, 51, 52, 60, 61, 85, private
060109	40-93	060503	15, private
		060504	25
		060505	All
		060506	All
		060507	All, 31
		060508	

Table 6. Link between SNAP and PRODCOM 2 and 3 categories containing solvents

SNAP	PRODCOM	SNAP	PRODCOM
<i>04</i>		<i>0602</i>	
<i>0401</i>		060201	24.14
040101	23.20, 24.14	060202	24.14, 24.66
040104	23.20, 24.14	060203	24.13, 24.14
<i>0405</i>		060204	24.14, 24.66
040503	24.14.13.53	<i>0603</i>	
040510	24.14.12.50	060301	24.14
040511	24.14.12.50	060302	24.14
040517	24.14.61.11	060303	24.14
040518	24.14.12.60	060304	24.14
040522	24.14	060305	24.14
040525	24.20, 24.14.15	060306	24.14, 24.42, 24.66.48.63
040526	24.14	060307	24.14, 24.3
040527	24.14	060308	24.14, 24.30.24
<i>0406</i>		060309	24.14, 24.62.10
040601	24.14, 24.2, 24.3, 24.60	060311	24.60
040602-04	24.14, 24.20	060312	24.14, 24.66
040610	23.10, 23.20, 24.14, 24.3, 24.6	060313	24.14, 24.66
040611	23.20, 24.14	060314	All
040617	All	<i>0604</i>	
<i>0408</i>		060401	24.13, 24.14
040801	24.13, 24.14.15.10	060402	24.14
040802	24.13, 24.14.15.10	060403	24.14, 24.3
040803	24.13, 24.14.15.10	060404	24.14
<i>06</i>		060405	24.60
<i>0601</i>		060406	24.14, 24.20, 24.3, 24.66
060101	23.20.13.70, 24.3	060407	24.14, 24.3, 24.51, 24.66
060102	23.20.13.70, 24.3	060408	23.20.13.70, 24.20.24.5, 24.60, 24.66
060103	23.20.13.70, 24.3	060409	24.14, 24.66
060104	23.20.13.70, 24.3	060411	24.42, 24.66
060105	23.20.13.70, 24.3	060412	All
060106	23.20.13.70, 24.3	<i>0605</i>	
060107	23.20.13.70, 24.3	060501	24.13, 24.14
060108	23.20.13.70, 24.3	060502	24.14, 24.66
060109	23.20.13.70, 24.3	060503	24.14, 24.66
		060504	24.13
		060505	24.13, 24.14, 24.66
		060506	24.13, 24.14, 24.66, 24.5, 24.66
		060507	24.13, 24.14, 24.66
		060508	All

The tables 5 and 6 illustrates, as mentioned before, that there is no direct links between SNAP and NACE and PRODCOM which facilitates aggregations to statistical standards or generations from basic statistical data.

3. Suggested alternative nomenclature for solvent use

A possible new nomenclature must

- Have a direct link to NACE and PRODCOM 2 and 3
- Cover all important emission sources
- Not be too detailed
- Distinguish the main emission sources in a way as similar to SNAP as possible

We will here look at two possibilities.

- Emissions by branch with split to solvent type
- Emissions by solvent type with split to branch

For the discussion it seems useful to group the emission sources into production of (pure) bulk solvents, production of solvent products and consumption of pure solvents and solvent products.

3.1. Production of (pure) bulk solvents

This includes the SNAP categories in table 7. The full link SNAP-NACE-PRODCOM is shown in the same table.

Table 7. SNAP categories involving production of pure bulk solvents. Link between SNAP, NACE, PRODCOM 3

SNAP	Title (SNAP)	NACE	PRODCOM 3
<i>04</i>	<i>Production processes</i>		
<i>0401</i>	<i>Processes in petroleum industries</i>		
040101	Petroleum products processing	23.2	23.20, 24.14
<i>0405</i>	<i>Processes in organic chemical industries (bulk production)</i>		
040503	1,2 dichloroethane	24.1	24.14.13.53
040511	Polystyrene	24.1	24.14.12.50
040517	[Formaldehyd]	24.1	24.14.61.11
040518	Ethylbenzene	24.1	24.14.12.60
040522	Storage and handling of organic chemical products	24.1	24.14
040525	Pesticide production*	24.2	24.20, 24.14.15
040526	Production of persistent organic compounds	24.1	24.14 (may be specified)
040527	Other	24.1	24.14
<i>0408</i>	<i>Production of halocarbons and SF₆</i>		
040801	Halogenated hydrocarbons production - By products	24.1	24.13, 24.14.15.10
040802	Halogenated hydrocarbons production - Fugitive	24.1	24.13, 24.14.15.10
040803	Halogenated hydrocarbons production - Other	24.1	24.13, 24.14.15.10

* Also in table 8

In this category, production of bulk solvents, most SNAPs may be allocated directly and unambiguously to a sector defined by NACE and a commodity defined by PRODCOM3. As required each SNAP is unambiguously linked to accepted statistical standards both for input and output. Consequently, no changes in SNAP classifications are needed.

It may be seen from this table that each individual SNAP is uniquely defined by the combination of a sector (NACE) and product (PRODCOM3). Exceptions are the general categories 040522 "Storage and handling of organic chemical products", 040527 "Other" and the sub-SNAPs under 0408. However, the first two categories could be better specified for a given process. In this respect the SNAPs become redundant or a presentational type of nomenclature given by the unique combination of a sector and product.

3.2. Production of solvent containing products

This includes solvents used for feedstock for production of solvent containing commodities or plastics. The connection between SNAP, NACE and PRODCOM 2 and 3 is shown in table 8.

Table 8. SNAP categories involving production of solvent products or products based on solvent feedstock. Link between SNAP, NACE, PRODCOM 2 and 3*

SNAP	Title	NACE	PRODCOM 2 and 3
<i>04</i>	<i>Production processes</i>		
<i>0405</i>	<i>Processes in organic chemical industries (bulk production)</i>		
040511	Polystyrene	24.1	24.14.12.50
040525	Pesticide production**	24.2	24.20, 24.14.15
040527	Other	-	-
<i>06</i>	<i>Solvent and other product use</i>		
<i>0603</i>	<i>Chemical products manufacturing or processing</i>		
060306	Pharmaceutical products manufacturing	24.4	24.14, 24.42, 24.66.48.63
060307	Paints manufacturing	24.3	24.14, 24.3
060308	Inks manufacturing	24.3	24.14, 24.30.24
060309	Glues manufacturing	24.62	24.14, 24.62.10

* The product causing emissions or future emissions

** Also in table 7

As seen, these types of processes are covered under two main SNAP headings, “Production processes” and “Solvent and other product use”. The processes covered under 06 are mainly solvents used as a feedstock for producing a solvent containing product, while those covered under 04 are solvent used as a feedstock for producing a non-solvent product. 040525 “Pesticide Production” probably refers to production of pesticide substances, though production of pesticide preparations (frequently containing solvents) also could be considered here. However, it seems to be clarifying to distinguish between the SNAPS in table 8 where solvents are used as feedstock and the others under SNAP 06 which are use of solvents as a final product.

Also in this case each SNAP can be unambiguously connected to a sector defined by NACE and one or more PRODCOM categories. There may be more processes than the ones specified in SNAP which are relevant to the production of solvent products. However, it may be argued that these are small compared to the ones included and they are included in “others”. More such processes may, whenever needed, easily be defined by the combination of an appropriate NACE category and PRODCOM category.

3.3. Use of solvents and solvent products

This includes all use of solvents when not used for feedstock for production of solvent containing commodities or plastics. In table 9 we show the link to NACE and PRODCOM 3 for these SNAP categories. The table should be considered as an example table, also other connections between SNAP and NACE, and especially PRODCOM 2 and 3 may be relevant.

Table 9. SNAP categories involving use of solvents and solvent products as final products. Link between SNAP, NACE and PRODCOM 2 and 3.

SNAP	Title	NACE	PRODCOM
04	<i>Production processes</i>		
0406	<i>Processes in wood paper pulp, food and drink industries and other industries</i>		
040601	Chipboard	20	24.14, 24.2, 24.3, 24.60
040602-04	Paper pulp	21	24.14, 24.20
040610	Asphalt roofing materials	26	23.10, 23.20, 24.14, 24.3, 24.6
040611	Road paving with asphalt	45	23.20, 24.14
040617	Other	-	All
06	<i>Solvent and other product use</i>		
0601	<i>Paint application</i>		
060101	Paint application: manufacture of automobiles	34	23.20.13.70, 24.3
060102	Paint application: car repairing	50	23.20.13.70, 24.3
060103	Paint application: construction and buildings (except 060107)	45	23.20.13.70, 24.3
060104	Paint application: domestic use (except 060107)	Private	23.20.13.70, 24.3
060105	Paint application: coil coating	27	23.20.13.70, 24.3
060106	Paint application: boat building	35	23.20.13.70, 24.3
060107	Paint application: wood	20, 36, 45, private	23.20.13.70, 24.3
060108	Other industrial paint application	01-05, 10-36, mainly 35, 36	23.20.13.70, 24.3
060109	Other non industrial paint application	40-93	23.20.13.70, 24.3
0602	<i>Degreasing, dry cleaning and electronics</i>		
060201	Metal degreasing	28-35	24.14
060202	Dry cleaning	93	24.14, 24.66
060203	Electronic components manufacturing	30-33	24.13, 24.14
060204	Other industrial cleaning	11-37	24.14, 24.66
0603	<i>Chemical products manufacturing or processing</i>		
060301	Polyester processing	25	24.14
060302	Polyvinylchloride processing	25	24.14
060303	Polyurethane processing	25	24.14
060304	Polystyrene foam processing	25	24.14
060305	Rubber processing	25	24.14
060306	Pharmaceutical products manufacturing	24.4	24.14, 24.42, 24.66.48.63
060311	Adhesive, magnetic tapes, films and photographs manufacturing	24.3	24.60
060312	Textile finishing	17	24.14, 24.66
060313	Leather tanning	18, 19	24.14, 24.66
060314	Other	-	All
0604	<i>Other use of solvents and related activities</i>		
060401	Glass wool enduction	26	24.13, 24.14
060402	Mineral wool enduction	26	24.14
060403	Printing industry	22	24.14, 24.3
060404	Fat, edible and non edible oil extraction	15	24.14
060405	Application of glues and adhesives	All, mainly 17-20, 25, 36, 45, private	24.60
060406	Preservation of wood	20, maybe also 36 and 45	24.14, 24.20, 24.3, 24.66
060407	Underseal treatment and conservation of vehicles	50	24.14, 24.3, 24.51, 24.66
060408	Domestic solvent use (other than paint application)	Private	23.20.13.70.24.20.2 4.5, 24.60, 24.66
060409	Vehicles devaxing	50?	24.14, 24.66
060411	Domestic use of pharmaceutical products	Private	24.42, 24.66
060412	Other (preservation of seeds...)	01, all esp. 73, 85, 60-62	All
0605	<i>Use of HFC, N₂O, NH₃, PFC and SF₆</i>		
060501	Anaesthesia	85	24.13, 24.14
060502	Refrigeration and air conditioning using halocarbons	Several, esp. 05, 15, 51, 52, 60, 61, 85, private	24.14, 24.66
060503	Refrigeration and air conditioning using other products than halocarbons	15, private	24.14, 24.66
060504	Foam blowing (except 060304)	25	24.13
060505	Fire extinguishers	All	24.13, 24.14, 24.66
060506	Aerosols cans	All	24.13, 24.14, 24.20, 24.3, 24.5, 24.66
060507	Electrical equipment	All, 31	24.13, 24.14, 24.66
060508	Other		All

Table 9 clearly illustrates that the correspondence between SNAP and NACE/PRODCOM not is straightforward. Several SNAP categories cover the same NACE branches. Also several SNAP categories cover the same PRODCOM categories. That means that it is not possible to list emissions by NACE or PRODCOM as desired, or to link basic statistical data to each SNAP category.

Consequently, a rearrangement of the nomenclature seems appropriate.

As mentioned in the introduction, there are several possibilities for a new classification.

1. Emissions by NACE with a split to solvent type
2. Emissions by solvent type with a split to NACE

Other possibilities like a rearranged type of SNAP classification will not be considered here.

We will below show the outcome of the two possibilities.

A. Emissions by NACE with split to solvent type (PRODCOM 2 and 3)

This possibility implies that emissions primarily are listed by NACE, but with a sub-split to solvent type. The level of detail, both concerning branch (NACE) and solvent type (PRODCOM 2 and 3) are chosen in a pragmatic manner in order to distinguish the most important emission sources and keep the similarity with SNAP.

An example table is shown in table 10. The table should be considered as a sketch. Further studies are needed to set up a complete reference table between NACE and PRODCOM.

Table 10. Solvent use nomenclature. By sector (NACE) with reference to product (PRODCOM 2 and 3).

NACE	Title	Product (PRODCOM)	
01	Agriculture, hunting	23.20	White spirit
		24.14	Organic base chemicals
		24.20	Pesticides (possible split)
		24.3	Paints, varnishes etc.
		24.4	Pharmaceutical products
		24.6	Other chemical products
02	Forestry, logging	23.1	Tar
		23.20	White spirit
		24.14	Organic base chemicals
		24.20	Pesticides (split)
		24.3	Paints, varnishes etc.
		24.6	Other chemical products
05	Fishing	23.1	Tar
		23.20	White spirit
		24.14	Organic base chemicals
		24.3	Paints, varnishes etc.
		24.4	Pharmaceutical products
		24.6	Other chemical products
10	Mining of coal and lignite; extraction of peat	23.20	White spirit
		24.14	Organic base chemicals
		24.3	Paints, varnishes etc.
		24.6	Other chemical products
11	Extraction of crude petroleum and natural gas	23.20	White spirit
		24.14	Organic base chemicals
		24.3	Paints, varnishes etc.
		24.6	Other chemical products
13	Mining of metal ores	23.20	White spirit
		24.14	Organic base chemicals
		24.6	Other chemical products
14	Other mining and quarrying	23.20	White spirit
		24.14	Organic base chemicals
		24.6	Other chemical products
15	Manufacture of food products and beverages	24.14	Organic base chemicals
		24.20	Pesticides
		24.66	Other chemical products
16	Manufacture of tobacco products	24.14	Organic base chemicals
		24.66	Other chemical products
17	<i>Manufacture of textiles</i>	23.12	Dyes
		23.20	White spirit
		24.14	Organic base chemicals
		24.3	Paints, varnishes etc.
		24.62.10	Glues
		24.66.4	Misc. chemical products (split)

18	<i>Manufacture of wearing apparel; dressing and dyeing of fur</i>	23.12 23.20 24.14 24.3 24.62.10 24.66.4	Dyes White spirit Organic base chemicals Paints, varnishes etc. Glues Misc. chemical products (split)
19	<i>Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear</i>	23.12 23.20 24.14 24.3 24.62.10 24.66.4	Dyes White spirit Organic base chemicals Paints, varnishes etc. Glues Misc. chemical products (split)
20	<i>Manufacture of wood and products of wood and cork, except furniture; [20.2 Manufacture of veneer sheets; Manufacture of plywood, laminboard particle board, fibre board and other panles and board]</i>	23.10 23.20 24.14 24.20 24.3 24.62.10 24.66.4	Tar White spirit Organic base chemicals Pesticides Paints, varnishes etc. Glues Misc. chemical products (split)
21	Manufacture of pulp, paper and paper products	24.14 24.3 24.62.10 24.66.4	Organic base chemicals Paints, varnishes etc. Glues Misc. chemical products (split)
22	<i>Publishing, printing and production of recorded media</i>	23.20 24.14 24.3 24.62.10 24.66.4	White spirit Organic base chemicals Paints, varnishes etc. Glues Misc. chemical products (split)
23	Manufacture of coke, refined petroleum products and nuclear fuel	23.20 24.14 24.3 24.66	White spirit Organic base chemicals Paints, varnishes etc. Other chemical products
24	<i>Manufacture of chemicals and chemical products</i>	23.10 23.20 24.14 24.3 24.66	Tar White spirit Organic base chemicals Paints, varnishes etc. Other chemical products
25	<i>Manufacture of rubber and plastic products</i>	24.13.12.37 23.20 24.14 24.3 24.62.10 24.66	Halogenides of non metals (SF ₆) White spirit Organic base chemicals Paints, varnishes etc. Glues Other chemical products
26	Manufacture of other non-metallic mineral products	23.10 23.20 24.14 24.3 24.66	Tar White spirit Organic base chemicals Paints, varnishes etc. Other chemical products
27	Manufacture of basic metals	24.13.12.37 23.20 24.14 24.3 24.66	Halogenides of non metals (SF ₆) White spirit Organic base chemicals Paints, varnishes etc. Other chemical products
28	<i>Manufacture of fabricated metal products, except machinery</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products

29	<i>Manufacture of machinery and equipment</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products
30	<i>Manufacture of office machinery and computers</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products
31	<i>Manufacture of electrical machinery and apparatus</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products
32	<i>Manufacture of radio, televisions and communication equipment etc.</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products
33	Manufacture of medical, precision and optical instruments etc.	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products
34	<i>Manufacture of motor vehicles, trailers and semi-trailers</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products
35	<i>Manufacture of other transport equipment (incl. oil platforms and ships)</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals Paints, varnishes etc. Other chemical products
36	<i>Manufacture of furniture</i>	23.20 24.14 24.3 24.62.10 24.66	White spirit Organic base chemicals Paints, varnishes etc. Glues Other chemical products
37	<i>Recycling</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals Paints, varnishes etc. Other chemical products
40	Electricity, gas, steam and hot water supply	24	Chemicals (possible split)
41	Collection, purification and distribution of water	24	Chemicals (possible split)
45	<i>Construction</i>	23.10 23.20 24.14 24.3 24.62.10 24.66	Tar White spirit Organic base chemicals (split) Paints, varnishes etc. Glues Other chemical products (possible split)
50	<i>Sale, maintenance and repair of motor vehicles; retail sale of aut. fuel.</i>	23.20 24.14 24.3 24.62.10 24.66	White spirit Organic base chemicals (possible split) Paints, varnishes etc. Glues Other chemical products (possible split)
51	Wholesale trade and commission trade, exc. motor vehicles	24	Chemicals (possible split)

52	Retail trade, exc. motor vehicles; repair of personal and household goods	23.20 24.14 24.3 24.62.10 24.66	White spirit Organic base chemicals Paints, varnishes etc. Glues Other chemical products
55	Hotels and restaurants	23.20 24.14 24.3 24.66	White spirit Organic base chemicals Paints, varnishes etc. Other chemical products (split)
60	<i>Land transport; transport via pipelines</i>	23.20 24.14 24.3 24.62.10 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Glues Other chemical products (split)
61	<i>Water transport</i>	23.1 23.20 24.14 24.3 24.66	Tar White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products (split)
62	<i>Air transport</i>	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (split) Paints, varnishes etc. Other chemical products (split)
63	Supporting and auxiliary transport activities; activities of travel agencies	24.0	Chemicals (possible split)
64	Post and telecommunications	24.0	Chemicals (possible split)
65	Financial intermediation, except insurance and pension funding	24.0	Chemicals (possible split)
66	Insurance and pension funding, except compulsory social security	24.0	Chemicals (possible split)
67	Activities auxiliary to financial intermediation, except insurance and pension funding	24.0	Chemicals (possible split)
70	Real estate activities	24.0	Chemicals (possible split)
71	Renting of machinery and equipment and of personal and househ. goods	23.20 24.14 24.3 24.66	White spirit Organic base chemicals (possible split) Paints, varnishes etc. Other chemical products (split)
72	Computer and related activities	24.0	Split?
73	<i>Research and development</i>	24.14	Organic base chemicals (possible split)
74	Other business activities (74.7 Ind. cleaning, 74.81 Photographic act.)	24.51 24.14 24.66	Soap and detergents Organic base chemicals (possible split) Other chemical products (split)
75	Public administration and defence; compulsory social security	24.0	Split?
80	Education	24.14	Organic base chemicals (possible split)
85	<i>Health and social work</i>	24.14 24.42 24.51 24.66	Organic base chemicals (possible split) Pharmaceutical products Soap and detergents Other chemical products (poss. split)
90	Sewage and refuse disposal, sanitation and similar activities	24.14 24.51 24.66	Organic base chemicals (possible split) Soap and detergents Other chemical products (split)

92	Recreational, cultural and sporting activities	24.0	Possible split
93	<i>Other service act (93.01 Washing a. dry-cleaning of textile and fur prod.)</i>	24.14 24.51 24.52 24.66	Organic base chemicals (possible split) Soap and detergents Perfumes and toilet preparations Other chemical products (split)
	<i>Households</i>	23.2 24.14 24.20 24.3 24.42 24.51 24.52 24.62.10 24.66	White spirit Organic base chemicals Pesticides (split) Paints, varnishes etc. Pharmaceutical products Soap and detergents Perfumes and toilet preparations Glues Other chemical products (split)

B. Emissions by solvent type (PRODCOM 2 and 3) with split to NACE

This implies that emissions are listed by solvent type defined by PRODCOM 2 and 3, with a sub split to sector. As in case 1, the level of detail given are determined by pragmatic considerations. That implies some simplification of the categories given in table 3.

An example table is shown in table 11. The table should be considered as a sketch. Further studies are needed to set up a complete reference table between NACE and PRODCOM.

Table 11. Solvent use nomenclature. By product (PRODCOM 2 and 3) with reference to sector (NACE).

PRODCOM	Title	Sector (NACE)
23.10.20.00	Tar	02 Forestry 05 Fishing 20 Manufacture of wood and products of wood and cork, except furniture; 24 Manufacture of chemicals and chemical products 26 Manufacture of other non-metallic mineral products 45 Construction All
23.20.13.70	White spirit, industrial spirit	17 Manufacture of textiles 18 Manufacture of wearing apparel; dressing and dyeing of fur 19 Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear All
24.12.21	Dyes	17
24.12.21.10	Disperse dyes and preparations based thereon	18 19
24.14	Organic base chemicals	
24.14.12	Hydrocarbons	10-45, 73
24.14.13	Chlorinated hydrocarbons (split possible)	10-45, 45, 73, 93.01, private
24.14.15	Halogenated hydrocarbons (other than chlorinated)	
24.14.15.10	Fluorinated; brominated or iodinated derivatives of acyclic hydrocarbons	10-45, 51, 52, 60, 61,p
24.14.15.30	Halogenated derivatives of acyclic hydrocarbons containing 2 or more different halogens	10-45, 51, 52, 60, 61,p
24.14.15.53	1,2,3,4,5,6-Hexachlorocyclohexane (lindane)	01
24.14.15.73	Chlorobenzene; o-dichlorobenzene and p-chlorobenzene	10-45, 73
24.14.15.75	Hexachlorobenzene (HCB) and DDT	01
24.14.15.79	Halogenated derivatives of aromatic hydrocarbons n.e.c.	10-45, 73
24.14.22	Alcohols (mono)	All
24.14.23	Poly alcohols	All
24.14.32	Esthere	10-45, 73
24.14.61	Aldehyds	10-45, 73
24.14.62	Ketons	10-45, 73

24.14.63	<i>Ethers</i>	10-45, 73	Industry, construction, research
24.14.64.30	<i>Other organic compounds n.e.c.</i>	10-45, 73	Industry, construction, research
24.14.71.70	Wood tar; wood tar oils; wood creosote; wood naphtha; vegetable pitch; brewer's pitch and similar preparations based on rosin; resin acids or on vegetable pitch	05	Fishing
		20	Manufacture of wood and products of wood and cork, except furniture;
		24	Manufacture of chemicals and chemical products
		26	Manufacture of other non-metallic mineral products
		45	Construction Private
24.14.73	<i>Oils and distillates from coal</i>	05	Fishing
		20	Manufacture of wood and products of wood and cork, except furniture;
		45	Construction Private
24.20	<i>Pesticides</i>	01	Agriculture, hunting
		02	Forestry, logging Private
24.3	<i>Paints, varnishes and similar coatings, printing and mastics</i>		All
24.30.11	Paints and varnishes dissolved in aqueous medium (possible split)		All
24.30.12	Paints and varnishes dissolved in organic solvents (possible split)		All
24.30.22	Other paints and varnishes (possible split)		All
24.30.24	Printing inks (possible split)	22	Publishing, printing and production of recorded media
24.42	<i>Pharmaceutical products (possible split)</i>	85	Health and social work Private
24.51	<i>Soap and detergents, polishes</i>	18	Manufacture of wearing apparel; dressing and dyeing of fur
		19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
		52	Retail trade, except motor vehicles and motorcycles; repair of personal and household goods
		74	Other business activities (74.7 Industrial cleaning, 74.81 Photographic activities)
		85	Health and social work
		90	Sewage and refuse disposal, sanitation and similar activities Private
24.52	<i>Perfumes and toilet preparations</i>	93	Other service activities (93.01 Washing and dry-cleaning of textile and fur products) Private
24.60	<i>Other chemical products</i>		All
24.62.10	<i>Glues</i>	17	Manufacture of textiles
		18	Manufacture of wearing apparel; dressing and dyeing of fur
		19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
		20	Manufacture of wood and products of wood and cork, except furniture;
		21	Manufacture of pulp, paper and paper products
		22	Publishing, printing and production of recorded media
		25	Manufacture of rubber and plastic products
		36	Manufacture of furniture
		45	Construction
		50	Sale, maintenance and repair of motor vehicles; retail sale of automotive fuel.
		52	Retail trade, except motor vehicles and motorcycles; repair of personal and household goods Private

24.66	Other chemical products		All
24.66.32	<i>Deefrezer and antifreeze</i>	60	Land transport; transport via pipelines
		62	Air transport
			Private
24.66.4	<i>Miscellaneous chemical products</i>		All
24.66.42.50	Preparations and chargers for fire-extinguishers		Several (Industry and services)
24.66.45.71	Washing and cleaning preparations		
24.66.45.90	Finishing agents, dye carriers and other preparations nec	17	Manufacture of textiles
		18	Manufacture of wearing apparel; dressing and dyeing of fur
		19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
24.66.48.63	Products and preparations for pharmaceutical or surgical uses	85	Health and social work
			Private
24.66.48.73	Mixtures containing acyclic hydrocarbons perhalogenated only with fluorine and chlorine		All
24.66.48.79	Mixtures containing perhalogenated derivatives of acyclic hydrocarbons containing two or more different halogens		All
24.66.48.90	Chemical products; preparations and residual products of the chemical or allied industry		All

3.4. Conclusion

The logic of the current SNAP nomenclature seems more clear when the sources are grouped into *production of bulk solvents*, *use of solvent as feedstock* and *end use of solvents*. The numbering system of sources should ideally reflect this.

For the first two groups, *production of bulk solvents* and *use of solvent as feedstock*, each individual SNAP category may be unambiguously linked to a sector defined by NACE and a product, causing the emissions, defined by PRODCOM 2 and 3. Furthermore, in most cases, each SNAP category may be uniquely defined by the combination of a NACE category and a PRODCOM 2 and 3 category. Consequently, there is no need to suggest changes.

For *end use of solvents* the SNAP classification does not seem appropriate with respect to links to NACE and PRODCOM 2 and 3. Several SNAPS correspond to the same NACE/PRODCOM and several NACE/PRODCOM combinations refers to the same SNAP category.

We have suggested two nomenclature systems based on NACE and PRODCOM 2 and 3; one lists sector (NACE) with correspondence to product (PRODCOM 2 and 3) and lists product (PRODCOM 2 and 3) with split to sector (NACE). These systems, seen as a matrix, PRODCOM*NACE are equivalent. Determining emissions from a solvent balance, the PRODCOM with split to NACE seems most appropriate, but determining emissions from measurements or emission factors, NACE with split to PRODCOM seems easier to apply. The level of detail in the proposed nomenclature is flexible and pragmatic. The branch list with split to product seems in general most equal to the original SNAP list.

SNAP is a well recognised nomenclature system, and despite the weaknesses discussed in this report, it has the advantage that it lists the most important sources of solvent emissions. Consequently, the PRODCOM*NACE matrix should for presentation have the possibility to be aggregated to SNAP. For most of the SNAPS this is possible; each combination of PRODCOM* NACE in table 9 and 10 may allocated back to an unique SNAP category. There are, however, a some exceptions, examples are given below.

040601 Chipboard production: May be overcome by introducing one more NACE level, 20.20. "Manufacture of veneer sheets; Manufacture of plywood, laminboard, particle board, fibre board and other panels and board"

060506 Aerosol cans: This is not a well defined PRODCOM product. Many PRODCOM categories may be in the form of aerosol cans. On the other hand, for estimating the emissions the expert must in any case identify type of products which are used in the form of aerosol cans.

060507 Electrical equipment: This is not a well defined PRODCOM product. The SNAP code is constructed to categorise emissions of SF₆ from such equipment.

A more general problem is to distinguish storage emissions from production emissions. The SNAPs concerning storage (040522 Storage and handling of organic chemical products) cannot by combination of NACE and PRODCOM 2 and 3 be distinguished from production. This can be solved by introducing a process dimension to the matrix in addition to sector and product.

This report gives ideas for an alternative nomenclature for solvent and product related emissions. The nomenclature is more precise and flexible than the SNAP/NOSE nomenclature and is linked to economic activities. On the other hand, the SNAP/NOSE nomenclature for solvents has been in practical use for several years. Consequently, the nomenclature suggested in this report should be tested and refined for possible practical purposes.

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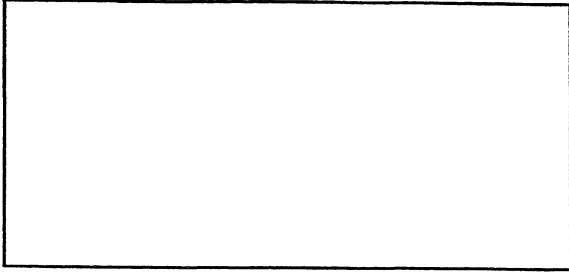
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