



Excellence through measurement



Safety Data Sheets

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SDS - Background

- Responsibility for the content of an SDS
 - initial responsibility falls on the manufacturer/importer
 - actors further down the supply chain should also provide a SDS or check the adequacy of the supplier's SDS

In all cases, **suppliers** of a substance or a mixture which requires a safety data sheet **have the responsibility for its contents**, even if they did not prepare the safety data sheet themselves

- Who should compile an SDS
 - *The safety data sheet **shall be prepared by a competent person** who shall take into account the specific needs and knowledge of the user audience, as far as they are known. Suppliers of substances and mixtures shall ensure that such competent persons have received appropriate training, including refresher training. (REACH, Annex II)*

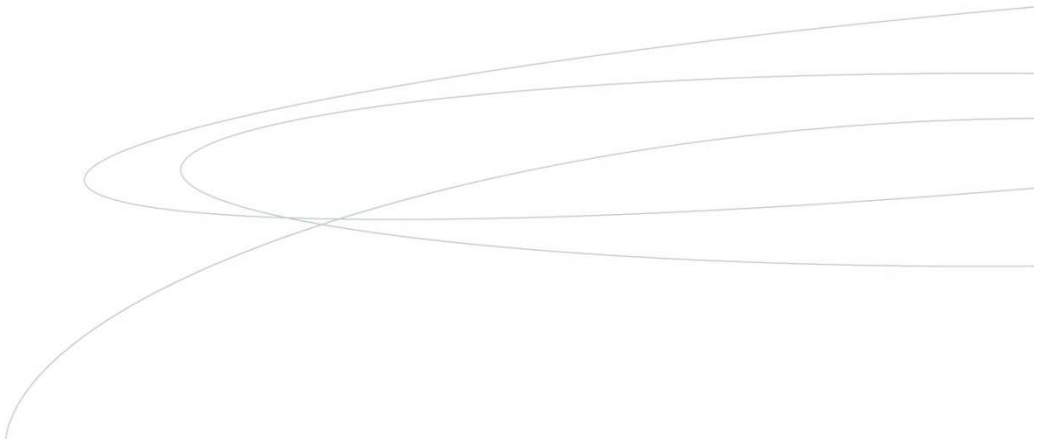
SDS Background

- SDS have to be updated
 - without delay
 - (a) as soon as new information which may affect the risk management measures, or new information on hazards becomes available
 - (b) once an authorisation has been granted or refused
 - (c) once a restriction has been imposed
 - The updated SDS (“significant update”) shall be provided free of charge on paper or electronically to all former recipients to whom they have supplied the substance or preparation within the previous 12 months.

SDS Background

- “A safety data sheet shall be provided free of charge on paper or electronically no later than the date on which the substance or mixture is first supplied.” (REACH)
- “The safety data sheet shall be supplied in an official language of the Member State(s) where the substance or preparation is placed on the market...” (REACH)
- Outside Europe we have similar requirements under different classification systems (Canada, US, Korea...) and with further languages

SDS Background

- The SDS should “paint a picture”
 - It needs to reveal (for example)
 - what is being supplied
 - any hazards (R and S phrases, H and P statements)
 - what to do if people are exposed to it
 - what to do in the event of a spillage
 - physical properties
 - transport classification
 - It must be consistent
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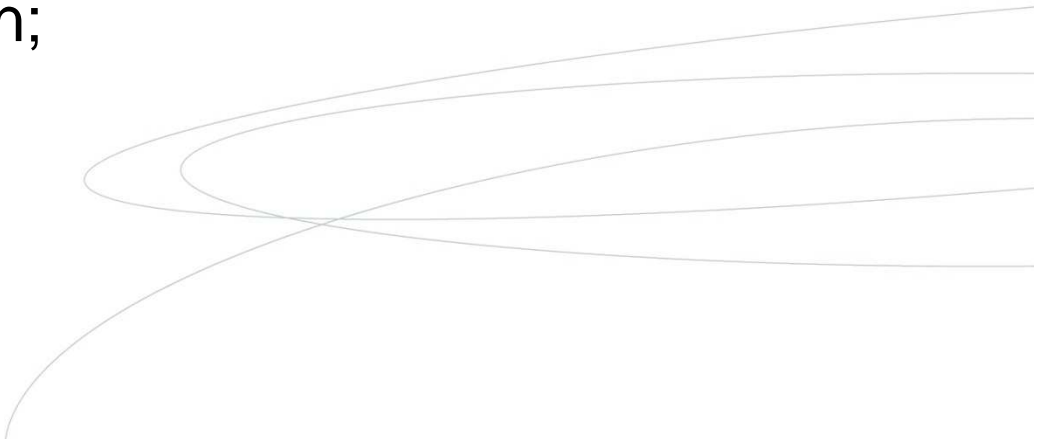
SDS Background

- SDS must be clearly expressed
- The material will be handled by van drivers and store men as well as scientists
- SDS will contain technical data, but needs phrases like:-
- “Rinse opened eye for several minutes under running water. Then consult a doctor.”

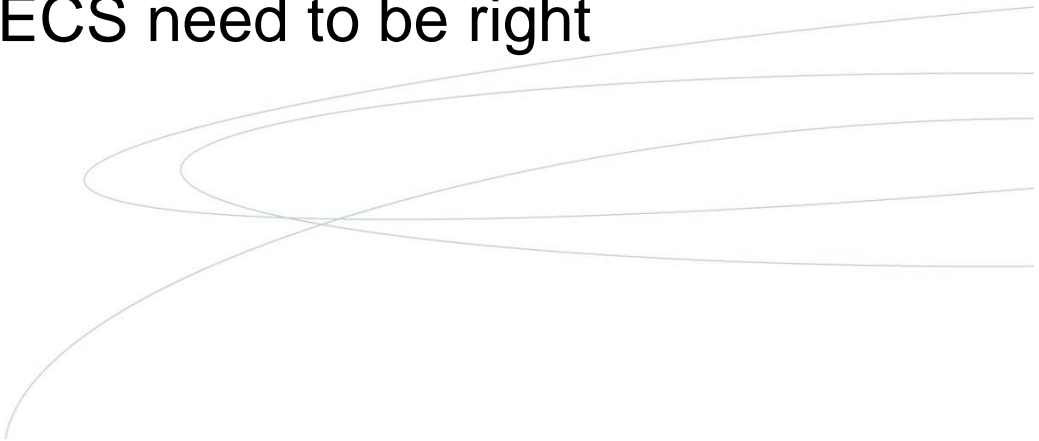
SDS (1) REACH Article 31(6)

- “The safety data sheet shall be dated and shall contain the following headings:
- 1. identification of the substance/preparation and of the company/undertaking;
- 2. hazards identification;
- 3. composition/information on ingredients;
- 4. first-aid measures;
- 5. fire-fighting measures;
- 6. accidental release measures;
- 7. handling and storage;
- 8. exposure controls/personal protection;

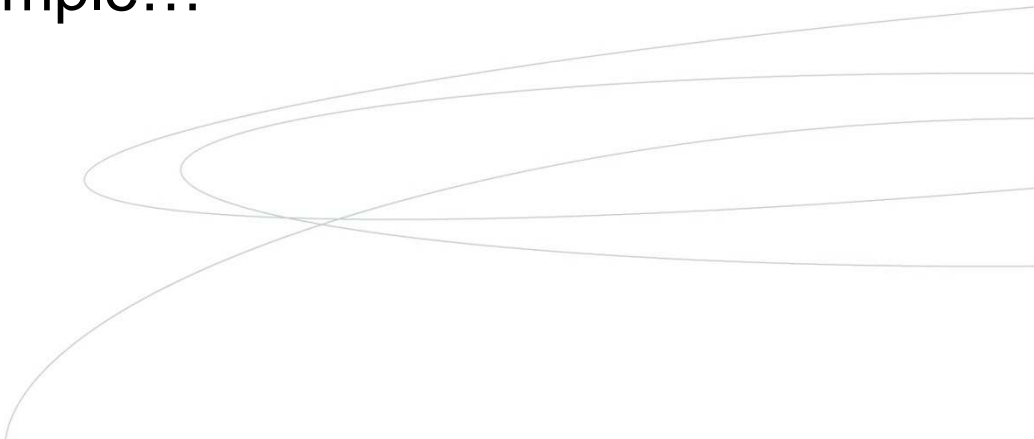
SDS (2) REACH Article 31(6)

- 9. physical and chemical properties;
 - 10. stability and reactivity;
 - 11. toxicological information;
 - 12. ecological information;
 - 13. disposal considerations;
 - 14. transport information;
 - 15. regulatory information;
 - 16. other information.”
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SDS

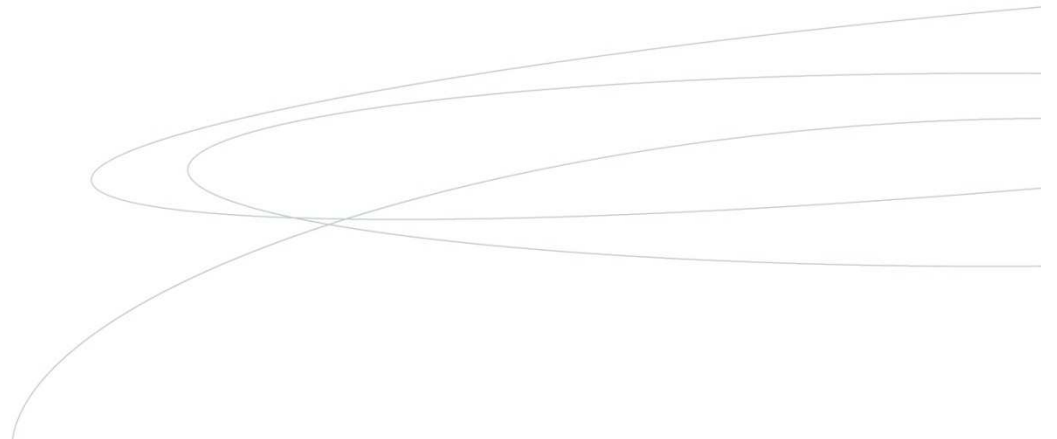
- An SDS has 16 Sections
 - All are important
 - Section 1 identifies the substance/mixture
 - Name, CAS RN and EINECS need to be right
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SDS

- IUPAC names are systematic, or semi-systematic but frequently complicated
 - “Trivial” (i.e. Non-systematic) names are useful if the audience understands them
 - Abamectin is a good example...
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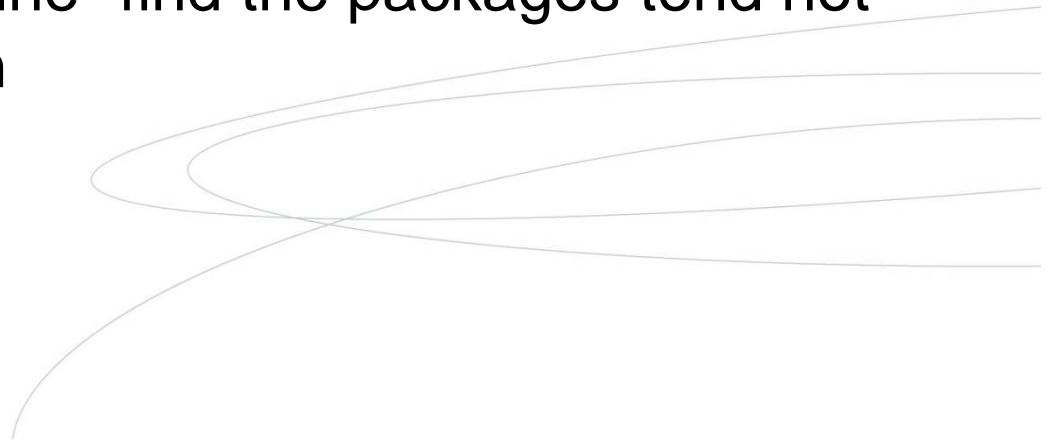
SDS – Names

- Flowers of Benjamin (described as ancient in 1787) is poetic, but not useful
- IUPAC Names and REACH are both designed to deal with pure chemicals
- Reality is very different!

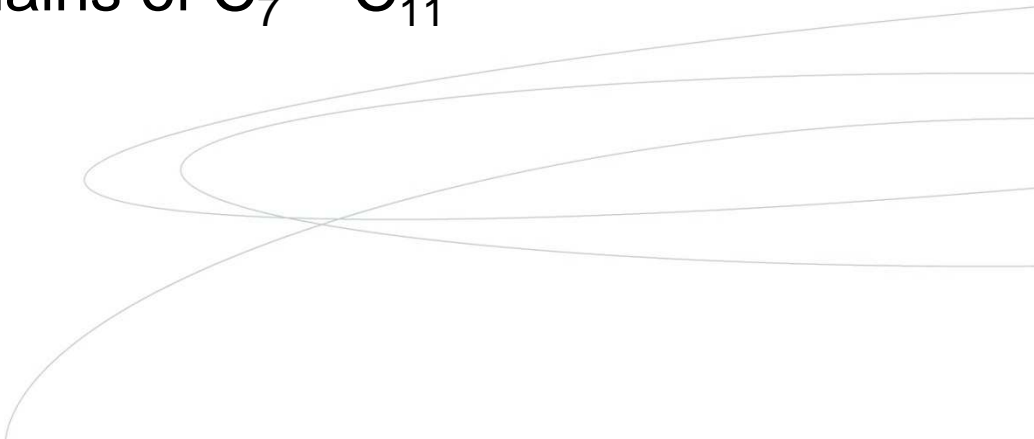


SDS - Names

- May need to conceal identity of the chemical
- Supplier wants to keep composition secret
- Use a generic name for the label, or a name the general public will not recognise – e.g legitimate shippers of packages labelled “cocaine” find the packages tend not to reach their destination



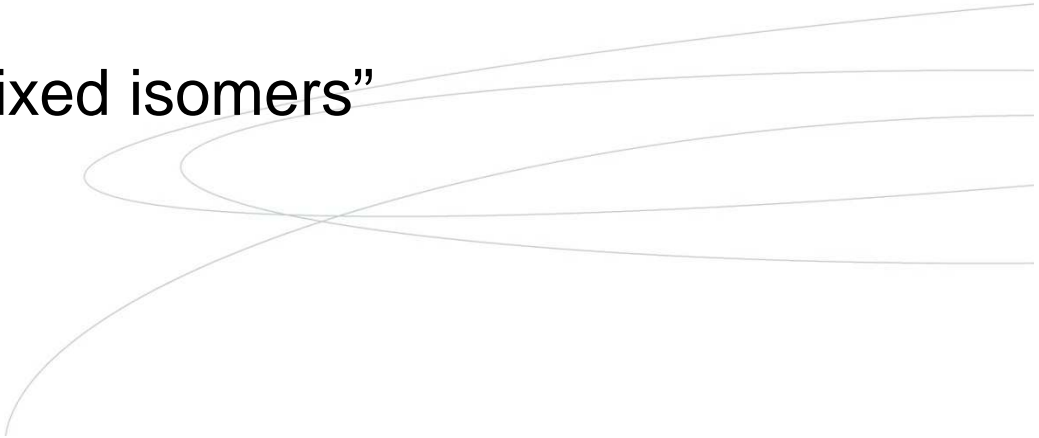
SDS – Names

- Many industrial chemicals are nowhere near 100 % pure, but are pure enough to be fit for purpose
 - Plasticiser DINP = “Diisononyl phthalate”
 - Actually di”alkyl” phthalate, where “alkyl” is a mixture of straight and branched chains of C₇ – C₁₁
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SDS – CAS Registry Numbers

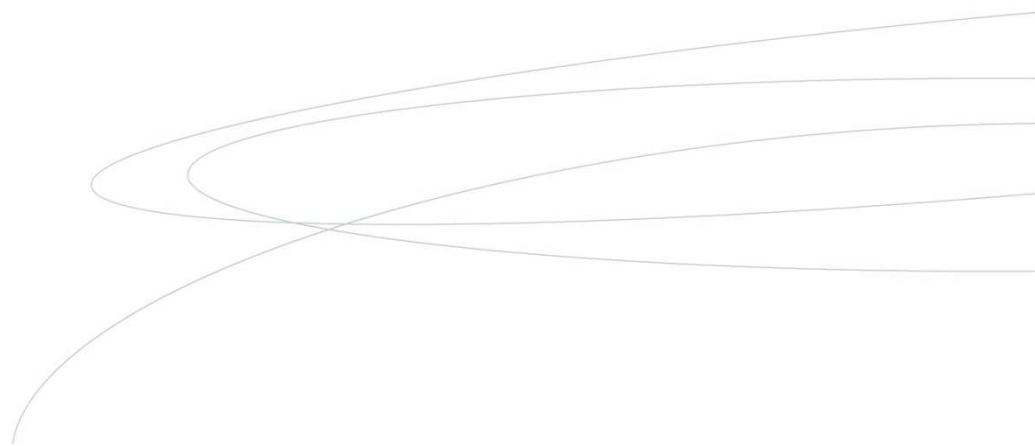
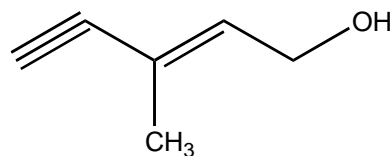
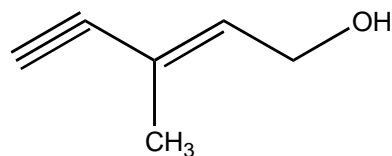
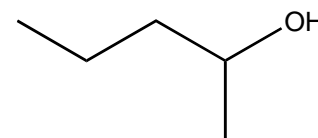
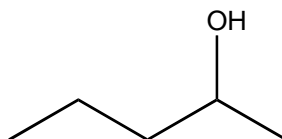
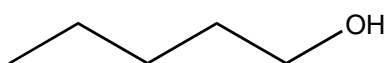
- Very useful – if they are right! Totally meaningless if they are wrong
- “Check digit” after second hyphen helps
- Acetone is CAS RN 67-64-1
- $1 \times 4 = 4$, $2 \times 6 = 12$, $3 \times 7 = 21$, $4 \times 6 = 24$, total 61
- The “1” in the units column matches the “1” in acetone’s CAS RN
- Dangerous when a CAS RN is used which means something, but not what you think it does

“Proper Shipping Names”

- Usually cover industrial chemicals
 - e.g. UN1262 is “Octanes” – obviously mixed isomers
 - UN1111 is “Amyl mercaptan” – not so obviously mixed isomers
 - “Amyl” means “pentyl, mixed isomers”
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“Proper Shipping Names”

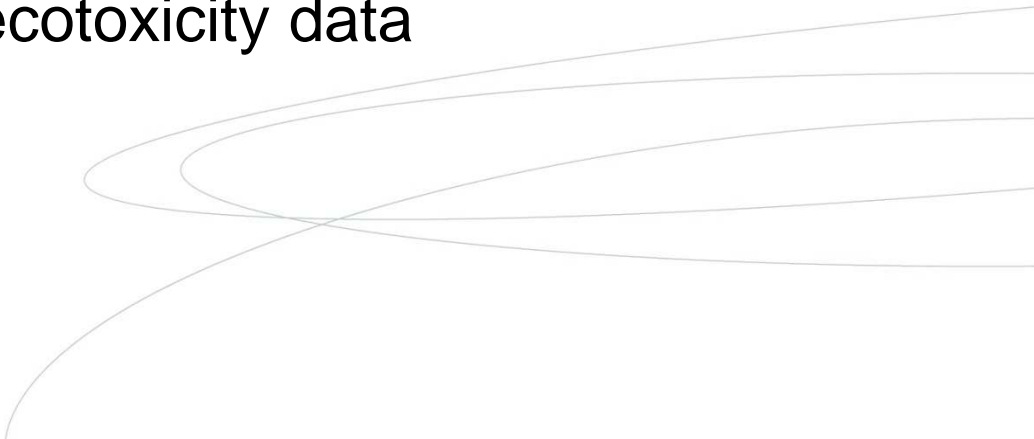
- UN2705 is “1-pentol”, which can be any of these...



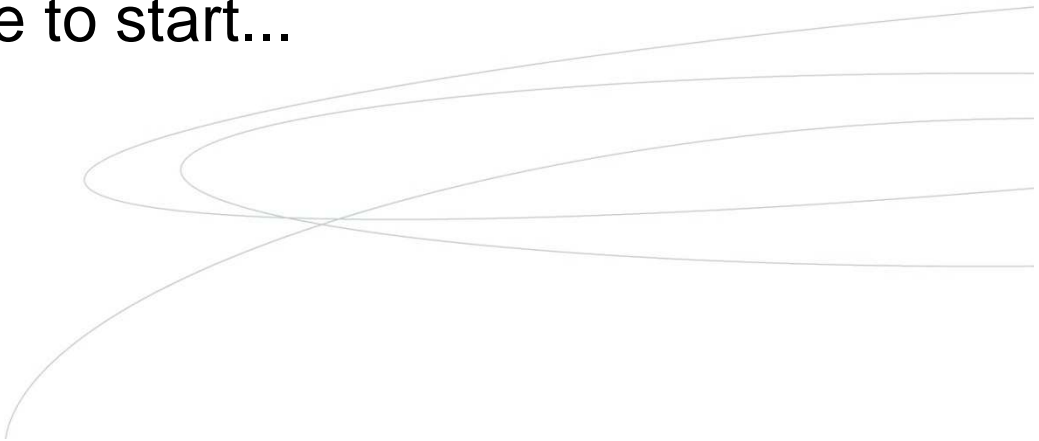
Sources of Data

- Supplier's original data
- <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database> (ECHA)
- [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng) (GESTIS)
- ECHA and Gestis sites are free

Sources of Data

- <http://ccinfoweb.ccohs.ca/rtecs/search.html> (RTECS)
 - <https://stnweb.fiz-karlsruhe.de/html/english/> (CAS RN)
 - RTECS and STN sites require subscription
 - DOSE – best source of ecotoxicity data
 - Merck Index, Sax etc.
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BEWARE OF THE INTERNET

- There is a lot of information on the internet
 - Not all of it is useful
 - Sources copy each other
 - Wikipedia is a good place to start...
 - But a bad place to finish
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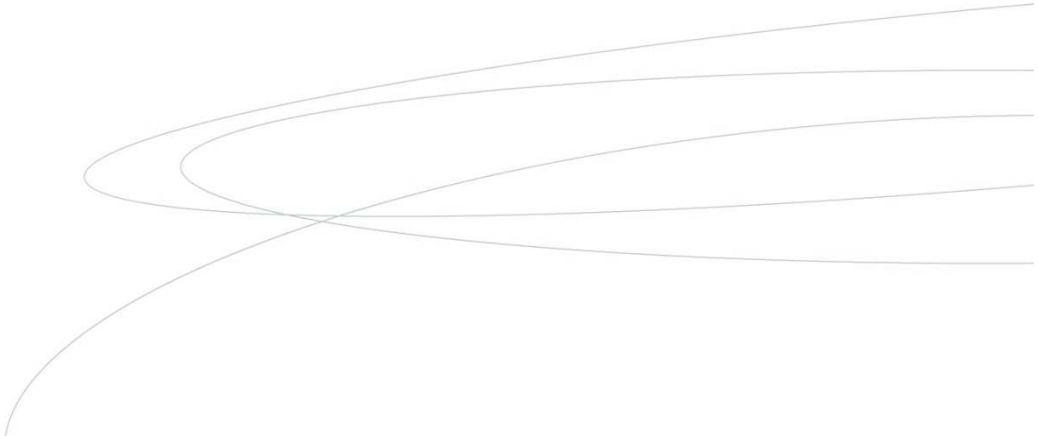
Writing the SDS

- You know the name, you have the data, now what?
- Training – SDS author must know what (s)he is doing
- Ideally, produce an SDS from scratch in a word processing program
- BUT – remember that a customer in EC needs an SDS in the appropriate language
- SDS software helps write the SDS and provides translations for some phrases
- <http://www.chcs.org.uk/> (CHCS) Courses

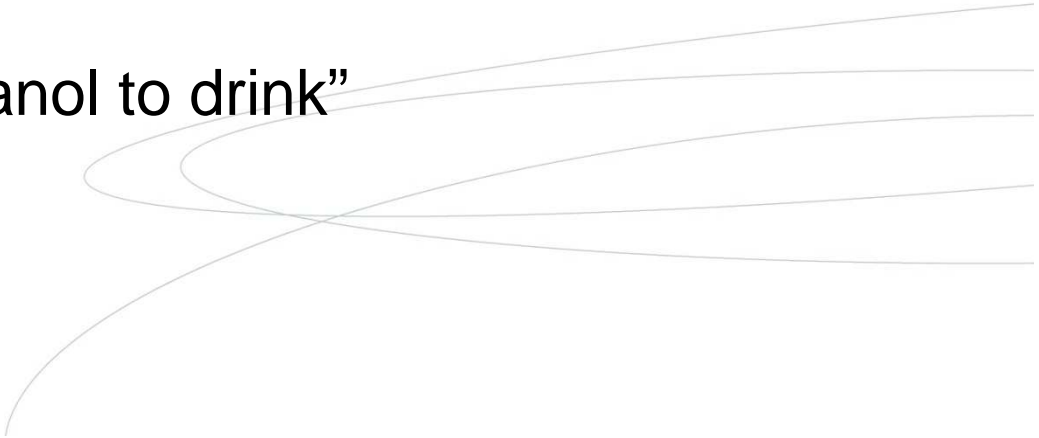
Writing the SDS

- LGC Standards has over 120 000 catalogue items
- Customers in more than 100 countries
- SDS software is essential for us – 30+ languages
- SDS authors still need to be trained
- Software proposes an SDS, but it is not always right!

Check SDS for sense

- “Liquid” with melting point of 170°C
 - Dealing with spillage of alkaline solution of cyanide
 - Do not treat spillage of nitric acid with sawdust
 - “No data available”
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Check SDS for sense

- R-phrases/H-Statements and Transport Classification must be consistent
 - US SDS rarely contain Environmental information
 - Do not say (if ingested) :-
 - “Give glass of 40 % ethanol to drink”
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Conclusion

- SDS are supposed to be useful
 - Give necessary detail, but do not be long-winded or use jargon. The SDS needs to be clear and concise.
 - People will not read a long document
 - Make it easy to read
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