MAGAM study

MAGAM: Multinational, retrospective analysis of data of Poisons Information Centres on corrosive Eye injuries caused by solid Automatic Dishwashing Detergents and other Detergents and Maintenance Products (the acronym is derived from the German title of the study).

A first retrospective study (MAGAM I[1)]) was conducted to assess effects from eye accidental exposure to automatic dishwash products and other detergents and maintenance products based on the data on record in the 11 Poisons Control Centres (PCC) in Austria, Germany and Switzerland covering the period from 1998 to 2007 and six Product Categories (Detergents for Automatic Dish Washing, Hand Dishwashing, All Purpose cleaning, Laundry cleaning, Bathroom/Toilet cleaning and Drain cleaning).

Product Category	**all exposures**	**eye exposures**	**Automatic dishwash**
All agents reported to PCCs	1,841,438	28,956	In 117 of the 162 recorded cases for automatic dishwash products the products could be identified as consumer products. Effects (PSS)[2)]: 29: asymptomatic 74: minor 1: moderate 0: severe
All household detergents	207,779	6,423	
Automatic dishwashing (solids)	16,755	162	
All-purpose cleaners	12,779	547	
Manual dishwashing	40,008	300	
Laundry detergents	23,361	668	
Drain cleaners	3,732	108	
Toilet cleaners	13,936	400	

This study concluded that "*Due to the dataset evaluation in this study hazard category 2, "eye irritation" with symbol GHS07 (exclamation mark) seems to be an adequate classification and labelling for solid household automatic dishwashing products to avoid unnecessary (and risky) medical treatment in many cases. The study shows that PC data can provide a solid basis of expert judgment for CLP."*

In order to harmonise the ophthalmological assessments and make data more robust, a second prospective study MAGAM II was performed in Austria and Germany[3a)] res. in Czech Republic, Denmark, Italy and Slovak Republic[3b)] covering one year and targeting all household and professional care detergents and maintenance products for private users. More than 1100 cases of eye contact were evaluated in detail and incident conditions were documented through this study. Follow-up was performed for all moderate and severe cases by structured telephone interview, including ophthalmologist support where appropriate and needed. In case of medical treatment a written medical report was requested and collected providing details on severity of eye injury and expected healing. This allowed prospective investigation of incidental eye exposures with detergent formulations through the conduct of the study.

The large majority of reported cases (931,~ 83%) were classified as "minor" eye symptoms (according to Poison Severity Scoring System), meaning that healing was reported within few hours up to 1 or 2 days in most symptomatic cases. A number of cases (104, ~ 9%) were classified with moderate effects (according to Poison Severity Scoring System), taking more than 1 week but less than 21 days to heal or asymptomatic (89, ~ 8%).

Only a comparatively low number of accidental eye injuries (2 cases out of 1126) were reported in which the detergent exposition lead to serious eye damage, taking more than 21 days to heal in the end. These results were presented at the EAPCCT congresses in 2015 and 2016.

The weight of evidence (WoE) approach is described in the CLP Regulation in Annex I, No 1.1.1,; i. a. data on human exposure, e. g. accident data bases, can be used for the WoE approach. Therefore, data generated by MAGAM II can be used as additional piece of evidence to classification in a WoE approach.

1) see 30th International Congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) 11-14 May 2010 and an abstract in Clin Toxicol 2010;48(3):245 or check *https://www.klinitox.de/263.0.html*
2) PSS = Poison Severity Scoring System, Persson H *et al* Clin Toxicol 1998;36, 205

3a) MAGAM II DE/AT: Clin Toxicol 2015;53, 315
3b) MAGAM II D/I/S/C: Clin Toxicol 2016;54, 372