Toxicity resulting from automotive screenwash exposures reported to the United Kingdom National Poisons Information Service from 2012 to 2015

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Background

Automotive screenwashes usually contain ethylene glycol, and/or methanol and/or isopropanol, or ethanol alone (Table 1). The concentrations and combinations of each constituent can vary considerably between products. Some products are sold 'ready-to-use' off the shelf while others require dilution in water at various ratios dependent on season.

Objective

To investigate the toxicity of automotive screenwash products as reported to the United Kingdom (UK) National Poisons Information Service (NPIS).

Methods

Telephone enquiries to the UK NPIS involving automotive screenwash products were analysed for the 4 year period January 2012 to December 2015.

Results

There were 295 enquiries involving 255 exposures. The majority of exposures followed ingestion (n=241, 95%), 14 of which also involved skin contact. The remainder were due to dermal exposure alone (n=6), eye exposure alone (n=3), inhalation alone (n=3), exposure to the ear (n=1) and multiple routes (n=1). 24% of those exposed were children below 5 years of age and 37% were under 18 years of age.

The composition of the screenwash ingested was known with certainty in only 124 of the 255 cases and is shown in Table 1.

Most patients who ingested screenwash were asymptomatic. The WHO/IPCS/EC/EAPCCT Poisoning Severity Score (PSS) is shown in Table 2. One elderly man (aged 87) developed severe features and later died (PSS 4) after having ingested screenwash containing ethylene glycol and an iron containing fertiliser.

Fomepizole was given in 10 patients (combined with dialysis in two cases), and additional ethanol was administered in two patients.

PSS	All ingestions n=241 (%)
PSS 0	167 (71.4)
PSS 1	60 (25.6)
PSS 2	5 (2.1)
PSS 3	1 (0.4)
PSS 4	1 (0.4)
PSS NK	7

Table 2. PSS for all cases of ingestion

Abdominal pain (n=7), nausea (n=6), vomiting (n=6), metabolic acidosis (n=6), headache (n=5), somnolence (n=5) and raised osmolar gap (n=2) were reported most commonly after ingestion.

Conclusions

Moderate features (PSS 2) developed in five patients and severe features in two, one of whom died. This is surprising given the potential toxicity of the chemicals contained in many screenwash products. Hence, it is likely that the amount actually ingested was very small, though the presence of ethanol in methanol- and ethylene glycol- containing products could have reduced the likelihood of toxicity developing.

Product composition n=124	n=	Contains ethanol n=	(%)
Contains methanol alone	23	19	(82.6%)
Contains ethylene glycol alone	10	8	(80.0%)
Contains isopropanol alone	3	3	(100.0%)
Contains ethanol alone	4	4	(100.0%)
Contains methanol and ethylene glycol	14	12	(85.7%)
Contains methanol and isopropanol	55	45	(81.8%)
Contains methanol, ethylene glycol and isopropanol	14	13	(92.9%)
Contains citric acid and boric acid	1	0	(0.0%)

Table 1. Composition of ingested screenwash products