

Important Information: Toxicity of Electronic Cigarette Liquid Refills



A new hazard for children is sweet-tasting, highly toxic liquid nicotine being sold as e-cigarette refills – if a toddler opens an e-cigarette or e-cigarette refill there is a potential that they could die from ingesting a very small amount of liquid.

This potential toxicity concern has been highlighted locally by two recent admissions to the Children's Hospital Emergency Department at Belfast Health and Social Care Trust following ingestion of liquid from e-cigarettes. Calls to the National Poisons Service (NPIS) about e-cigarette liquid ingestions also increased in 2013.¹

Since e-cigarette refills are not medicinal products they may not be child proof and the health warnings from the tobacco manufacturers may not always be sufficient to highlight the seriousness of the potential risk, particularly to children.

Electronic cigarettes:

E-cigarettes have been a hot-topic in the EU for the past few months. These are currently regulated as consumer products in the UK.

Their use has grown rapidly with an estimated 1.3 million people using them in 2013 in the UK.³

Currently not all e-cigarettes are the same. Different brands and products have varying amounts of nicotine content. Some e-cigarette refills are formulated with sweet smelling chemicals and packaged in brightly coloured tubes that could appear attractive to babies or young children.

In December 2013 revised text for the European Tobacco Directive was proposed to make tobacco products less attractive by strengthening the rules on how they can be manufactured, presented and sold. It also proposed that e-cigarettes should be regulated either as medicinal products or in accordance with specific requirements set out in the Tobacco Products Directive. The draft Directive has yet to be formally adopted by the European Parliament and the Council. Once the Directive is adopted, member states will have two years to transpose the new rules into national law.⁴

Nicotine Toxicity

Nicotine can be **highly toxic**, particularly in children or infants, if enough is consumed. It is highly toxic by ingestion, inhalation and skin contact.

The fatal dose has been estimated to be as little as 40mg (i.e. less than 2mL of some strengths of liquid refills) of nicotine in an adult. Indeed, just a few milligrams of nicotine have caused severe symptoms. The fatal dose in a child would be expected to be even less.

The table overleaf details the nicotine concentration in electronic cigarettes.

Nicotine can be very rapidly absorbed with central nervous system, neuromuscular and autonomic features.

Early features of ingestion include burning in the mouth and throat, nausea, vomiting, confusion, dizziness, weakness, hypersalivation, sweating and increased bronchial secretions. The onset of symptoms is expected within 15 to 30 minutes, but may be sooner in children and not everyone reacts in the same way to poisons. In children vomiting is an early feature of toxicity.

Advice is available by calling the Northern Ireland Regional Poisons Centre right away: 0844 892 0111

Management of Nicotine Ingestion, Inhalation and Skin Contact

Form of nicotine	Recommended management	
	Child	Adult
Electronic cigarettes	Refer immediately to the nearest Emergency Department (A&E) for medical assessment.	
ANY amount of an un-smoked cigarette or 2 or more smoked cigarette butts, or one cigar butt or ANY amount of nicotine-containing product.	Refer immediately to the nearest Emergency Department (A&E) for medical assessment.	Adults who are symptomatic should be referred for medical assessment.*

* For adults, if a form of nicotine other than electronic cigarettes is chewed on and/or swallowed/inhaled/or involves skin contact then it may be less dangerous and, whilst close observation at home for nausea, vomiting, abdominal pain, agitation, and/or increased salivation may be all that is needed, expert advice should always be taken. **Children will always require referral to the nearest Emergency Department.**

Nicotine content of products	
Product	Nicotine content ²
Electronic cigarette	Various strengths: 6mg/mL, 12mg/mL, 18mg/mL, 24mg/mL, 36mg/mL
Cigarette	13 to 29mg per cigarette.
Sublingual tablet	2mg
Gum	2mg, 4mg
Patch	Various strengths containing from 8.3mg (releasing 5mg/day) to 52.5mg (releasing 30mg/day)
Inhalator cartridge	10mg, 15mg
Lozenge	1mg, 2mg, 4mg
Nasal spray	10mg/mL (500mcg/spray)
Oromucosal spray	14.3mg/mL (1mg/spray)

Northern Ireland Regional Poisons Centre (0844 892 0111)

This number is for healthcare professionals ONLY and allows access to our experts at the Northern Ireland Regional Medicines and Poisons Information Centre (RMPIS) Belfast Health and Social Care Trust, Royal Hospitals site: 9am — 5pm Monday to Friday; calls are automatically transferred to the UK National Poisons Service (NPIS) out-of-hours. The local RMPIS team also have access to advice from experienced consultant toxicologists based at the Edinburgh NPIS Unit.

Advice to community pharmacists and GPs who give smoking cessation advice:

Patients should be advised to keep nicotine containing products away from children, especially very young children and toddlers, who are more susceptible to nicotine poisoning.

References

1. NPIS email correspondence to Regional Medicines and Poisons Information Service, 13/01/2014.
2. TOXBASE. www.toxbase.org (accessed 16/01/2014).
3. MHRA. Press Release : UK moves towards safe and effective electronic cigarettes and other nicotine-containing products. June 2013 www.mhra.gov.uk (accessed 15/01/2014).
4. MHRA. Summary Nicotine Containing Products 31 December 2013. www.mhra.gov.uk (accessed 15/01/2014).

This newsletter has been produced for GPs and Pharmacists by the Regional Pharmacy and Medicines Management Team in collaboration with the Northern Ireland Regional Medicines and Poisons Information Centre.

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