

Risk of brain damage in babies from naphthalene in mothballs: call to consider a national ban

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TO THE EDITOR: About 5% of Australians of Asian, African, Middle Eastern or Mediterranean descent have glucose-6-phosphate dehydrogenase (G6PD) deficiency.¹ Affected babies can develop massive haemolysis within hours of exposure to clothes stored with mothballs containing naphthalene. It has long been known that this results in severe jaundice, which may lead to kernicterus² and profound brain damage, for which the cost is either a lifetime of dependency and very expensive care, or death.

We are aware of three cases of kernicterus in babies with G6PD deficiency in Australia in the past 3 years, one of which was associated with exposure to naphthalene in mothballs. One baby died. The exact incidence of severe neonatal jaundice and kernicterus in Australia is unknown, but it is the subject of an ongoing study funded by the Cerebral Palsy Foundation and coordinated through the Australian Paediatric Surveillance Unit.

In Australia, packages of naphthalene mothballs must carry a warning that the product is harmful to children. However, clinical directors of neonatal units that comprise the Australian and New Zealand Neonatal Network have unanimously agreed that warning labels give insufficient protection. They have called on the Australian Pesticides and Veterinary Medicines Authority (APVMA) to act in harmony with the European Union, which banned the sale of mothballs containing naphthalene in 2008,³ following a report by the European Chemicals Bureau.⁴ The adverse risk-benefit ratio for naphthalene provides strong justification for its withdrawal. A submission to this effect has been lodged with the APVMA.

Some mothballs contain paradichlorobenzene, a chemical related to naphthalene and associated with haemolysis. Less toxic products that protect clothes against moths exist. Department stores in the United Kingdom have replaced moth repellents containing naphthalene with products containing natural substances, such as sandalwood and lavender.

Between 2004 and 2010, the New South Wales Poisons Information Centre reported that it received about one call per week concerning children exposed to naphthalene in

Number of calls to the New South Wales Poisons Information Centre reporting children exposed to naphthalene in moth repellents, 2004–2010

Year	Number of calls
2004	55
2005	59
2006	65
2007	67
2008	73
2009	45
2010	71
Total (average)	435 (62)

Source of data: Judith Kirby, Department Head, NSW Poisons Information Centre, personal communication. ◆

moth repellents (Box). The Victorian Poisons Information Centre reported 53 calls in 2008.⁵

While acknowledging the importance of raising awareness of the dangers of naphthalene, we believe that the safest course is prevention — that is, an Australia-wide ban of mothballs containing naphthalene.

Readers who wish to report cases of naphthalene toxicity are encouraged to contact APVMA at aerp@apvma.gov.au.

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1 Nkhoma ET, Poole C, Vannappagari V, et al. The global prevalence of glucose-6-phosphate dehydrogenase deficiency: a systematic review and meta-analysis. *Blood Cells Mol Dis* 2009; 42: 267-278.

2 Valaes T, Doxiadis SA, Fessas P. Acute hemolysis due to naphthalene inhalation. *J Pediatr* 1963; 63: 904-915.

3 Commission of the European Communities. Commission Decision of 28 July 2008 concerning the non-inclusion of certain substances in Annexes I, IA or IB to Directive 98/8/EC of the European Parliament and of

the Council concerning the placing of biocidal products on the market (notified under document number C(2008) 3854). 2008/681/EC. *Official Journal of the European Union* 20 Aug 2008. http://www.salute.gov.it/imgs/C_17_pagineBiocidi_30_listaFile_itemName_6_file.pdf (accessed Jan 2011).

4 European Chemicals Bureau. European Union risk assessment report. Naphthalene. CAS No: 91-20-3. EINECS No: 202-049-5. Luxembourg: Office for Official Publications of the European Communities, 2003. http://ecb.jrc.ec.europa.eu/documents/Existing-Chemicals/RISK_ASSESSMENT/REPORT/naphthalenereport020.pdf (accessed Jan 2011).

5 Victorian Poisons Information Centre. Annual report 2008. <http://www.austin.org.au/Assets/Files/VPIC%20Annual%20Report%202008.pdf> (accessed Jan 2011). □