Aggressive marketing practices for breastmilk substitutes have been blamed for the decline of breastfeeding in the Philippines, where only 16·1% of Filipino infants aged 4–5 months are exclusively breastfed, half stop exclusive breastfeeding by the third week of life, and 13% are never breastfed (the lowest ever-breastfed rates in 56 countries[13]). The Department of Health estimates that total annual purchases of infant-formula amounted to US$420 million.[14] Nearly $100 million is spent annually on the advertising of breastmilk substitutes,[15] which is about half the annual budget for the Department of Health.

There have been suspicions that violations of the Milk Code have occurred in the past with over-zealous sales techniques. Mothers receive various gifts and are targeted to attend classes where infant-formula milk is promoted. Orders have been made by the Department of Health to compel certain companies to cease unauthorised promotions.[16,17]

The Supreme Court's ruling gives a fresh mandate and greater power to the Government's regulatory agency to check the industry's practices that undermine breastfeeding and subvert the public-health system. But much remains to be done and the struggle goes on to restore the culture of breastfeeding in the Philippines.

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Getting nuclear-bomb fuel out of radiopharmaceuticals

Proliferation risks inherent in nuclear-reactor programmes, vast stocks of fissile material usable in nuclear weapons, more fingers on nuclear triggers, policies and threats that increase the likelihood of use of nuclear weapons, and the spectre of terrorism. A frightening list that makes the threat of use of nuclear weapons into a global emergency. Even a small nuclear detonation in a city would overwhelm any health-care system.[1] Of particular relevance to health professionals is the near-universal use of weapons-grade highly enriched uranium (HEU), containing over 90% uranium-235, to produce radiopharmaceuticals for nuclear medicine and radiotherapy departments.[2,3] Many observers have voiced concern about the vulnerability of this process to diversion of HEU to non-state actors,[4] and the US Congress mandated the National Academy of Sciences there to study medical isotope production without HEU.[5]

More than 95% of the world's workhorse isotope, technetium-99m (used in 80% of nuclear-medicine procedures worldwide), is sourced from reactors that use HEU neutron targets, HEU reactor fuel, or both. Production uses up only 3% of the available uranium-235, hence the leftover target is still bomb-grade. Because about 85 kg of HEU is used for these targets each year and targets are not

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recycled, large amounts, enough for many bombs the size of that dropped over Hiroshima, are stockpiled in several poorly secured commercial locations. The International Atomic Energy Agency's safeguards are based on 25 kg of HEU being needed for a nuclear weapon;[6] sophisticated bomb makers could make one with much less.[7] In 2002, the US National Research Council warned that non-state actors could make crude HEU weapons, and that the main impediment that prevents countries or technically competent terrorists from making nuclear weapons is the unavailability of nuclear material, especially HEU.[8]

The International Atomic Energy Agency's database of illicit trafficking contains more than 1000 cases of intercepted smuggling of radioactive materials between 1993 and 2006. By 2005, 18 seizures of stolen plutonium or HEU had been confirmed by the states involved,[7,9] and such incidents continue. Acquisition of fissile material remains the most difficult impediment to would-be bomb-builders: intention and technical capacity clearly exist.

The good news is the consensus among technical experts that conversion from HEU to low-enriched uranium (LEU) fuel and targets is practicable: "The conversion of radioisotope production, specifically Mo-99, to LEU is technically feasible, and…remaining obstacles to conversion of this activity are chiefly of commercial nature", according to Jose Goldemberg, co-chair of the International Panel on Fissile Materials.[10] LEU targets (that contain less than 19·75% of uranium-235) are not directly usable for weapons and are suitable for the production of molybdenum-99 or technetium-99m.

The temporary closure of Chalk River, a Canadian nuclear reactor, led to the possibility of a worldwide shortfall in radioisotopes, highlighting our dependence on a few suppliers.[11] Although small producers in Argentina, Indonesia, and Australia use LEU targets, their global market-share is less than 5% (and the new Australian reactor has not produced isotopes since opening in April, 2007, and was inactive while being repaired in January this year). The market is dominated by four major suppliers: MDS Nordion (Canada), Tyco Healthcare's Mallinckrodt (Netherlands), Institut National des Radioéléments (Belgium), and Nuclear Technology Products (South Africa). The bad news is that none of these suppliers are using LEU or planning to convert, despite compelling reasons and no technical impediments.[4]

An assessment of the commercial viability of conversion to LEU targets concluded that the increased cost to consumers in most applications would be 1–2%.[2] Savings associated with the use of LEU targets through elimination of the high security costs needed for storage and transport of HEU could be large.

The National Academy of Sciences will hopefully make comprehensive recommendations to hasten the removal of HEU from production of medical isotopes. Such recommendations could include: nuclear-medicine departments sourcing isotopes produced without HEU or encouraging suppliers to convert to LEU; optimum clinical application of imaging with non-ionising and non-reactor-based ionising radiation; and research and development of non-reactor generation of isotopes (especially technetium-99m) currently sourced from reactors.

Meanwhile, physicians and health-care organisations should pressure relevant governments (and the Euratom Supply Agency) to compel existing facilities that use HEU to convert to LEU, and ensure that no new reactors within their jurisdiction use HEU. Health professionals have a strategic opportunity and obligation to disrupt one of the most vulnerable routes to a nuclear bomb made by a terrorist with black-market HEU.

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We declare that we have no conflict of interest.

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Hydrophobia phobia as social history

A botanical garden visited a decade ago in a far-off country displayed, at ground level but referring to infection in animals in the tree cover above, the warning "Beware lyssavirus". Any hint of "rabies" would, presumably, have hit ticket sales. The diseases, rabies itself and hydrophobia, have always had fearful connotations. Despite the fact that rabies is largely under control in several countries and even though, with prompt treatment, a bite from a rabid animal need not be fatal, there are an estimated 55 000 human deaths from hydrophobia every year worldwide, two-thirds of them in Asia, and most of those who die are children. World Rabies Day, which this year falls on Sept 28, is in the calendar because of an alliance focusing on the preventability of an infection that still merits clinical and public-health attention.[1,2] WHO charts appear to count all imported cases of rabies and hydrophobia so one migrant bat dead from rabies in, say, the UK or one patient diagnosed in France with an infection acquired abroad is enough to mean that neither country is mapped as strictly rabies-free.

Compared with tuberculosis or venereal disease, lyssavirus infections might not seem strong candidates for a study with a social perspective, but they are, as medical historians Neil Pemberton and Michael Worboys show. There were fierce debates between and among the veterinary and medical professions in Britain complicated by strongly held views on both sides of the animal rights debate and among legislators and by social class divisions. By the end of the 19th century, passions and prejudices were waning as microbiology began to clarify cause and prevention.[3] In that century, British deaths from hydrophobia averaged fewer than 20 a year, a figure that makes the attention given to rabies by newspapers and politicians seem disproportionate, but Britain was not unique in this respect. A rabies outbreak in Massachusetts, USA, in 1876–81 prompted a detailed programme to calm public fears.[4]

The death toll was patchy with persistent foci in London and, puzzlingly, the north-west of the UK. In 1890 a dog attacked several people at two different sites near Manchester. One set of victims was sent promptly to Paris for a course of Louis Pasteur's immunisations while the others were exposed to "Hydrophobine" otherwise known, after the town of its origin in east Lancashire, as the Clitheroe treatment. This difference in approach, which seems to have reflected the whims and interests of the two local medical officers of health, triggered Pemberton and Worboys' inquiry. From Ormskirk in the same county came another of the regimens, not all of them wholly without foundation, that thrived in that era. In the 1880s no fewer than 45 "treatments" were recognised. Today, hydrophobines are a class of cysteine-rich proteins

Remedy	Ingredients
Mead regimen	Powdered liverwort and black pepper, bleeding, and daily cold baths
East India specific	Cinnabar and musk with brandy
Snake root	Virginia snake root, asafoetida gum, camphire gum, saffron syrup
Mercury	As mercury ointment or as regimen of vinegar and salt pickle, yellow basil, cinnabar, and purging
Ormskirk medicine	Chalk, Armenian bole, alum, elecampane root, oil of anise*
Clitheroe treatment	Hydrophobine (trade name); ingredients unknown
Miroff method	Vapour baths, sarsaparilla and guaiac to drink, and topical cinnabar
Tissot regimen	Repeated bleeding; twice-daily warm baths; clysters (enemas), mercury ointment; cinnabar and musk in lime-tree and elderflower infusion; snake root, camphire and asafoetida with opium; and light diet plus ipecacuanha or quinine if required

*Buchan[7] thought that the principal ingredient was cinnabar.

Table: **A few 19th-century remedies for bites from a rabid dog and a treatment for established hydrophobia (Tissot)**