Letters

Disinsection of aircraft

Editor – While agreeing with Gratz et al. (*1*) that vector-borne diseases are a global public health issue and that their control is essential, Das et al. (*2*) question the safety of aircraft disinsection as recommended by the World Health Organization to prevent spreading malaria and other vector-borne diseases by aircraft and to aircraft personnel and passengers. All chemicals are toxic, and it is very important to be aware of risks related to exposure to them. It is therefore valuable to question present practices and seek better and less harmful ones, as advocated by Das and coworkers. However, their letter contains some inaccuracies that need to be corrected so that the discussion on aircraft disinsection continues on a sound basis.

Pyrethroids are among the safest pesticides: no long-term or serious health effects have been observed after decades of very extensive use worldwide. Pyrethroids do not accumulate in the body and have not caused long-term adverse effects in experimental animals. Toxicity of chemicals depends on the dose. The duration of exposure among aircraft personnel is very short because of the short time of use and the rapid exchange of air in the aircraft. The cumulative exposure of passengers and crew is thus considerably less than that of, say, agricultural workers. Permethrin, for example, has been and still is extensively used as an anti-lice agent; it is applied directly onto the skin, even in children, without reports of serious adverse effects. Pyrethroids are also very widely used as household pesticides — here, too, the exposure is likely to be much higher than in aircraft, where the ventilation is much faster than in any residential buildings.

No "exacerbation of pre-existing asthma" due to exposure to pyrethroids, mentioned by Das et al., has been documented. Specifically, such a phenomenon is not mentioned in the reference they give to support this notion, which is a well-regarded handbook on toxicology of pesticides (*3*).

According to Das et al., WHO's view that use of pyrethroids on aircraft is unlikely to precipitate pre-existing diseases contradicts existing literature. To support this claim, they write: "Studies suggest that asthmatic patients respond to inhalation exposure to pyrethroids with airway hyper-responsiveness and that even 'low-irritant' aerosols may trigger nose and eye symptoms." This claim is based on a single study (*4*), in which permethrin or phenothrin (the only chemicals that WHO recommends for aircraft disinsection) were not tested. Exposure in the study was very heavy, effects were marginal and were only observed after exposure to commercial aerosols — where the total amount of pyrethrins was less than that of other active ingredients (piperonyl butoxide or N-octylbicycloheptene dicarboxamide) — while no significant effects on lung function or airway responsiveness were observed after similar exposure to an aerosol containing pyrethroids only; a low-irritant aerosol (i.e., an aerosol containing pyrethroids but no other active components) specifically did not trigger significant symptoms. The WHO-recommended aerosol does not contain piperonyl butoxide or N-octylbicycloheptene dicarboxamide, which would appear to be responsible for the marginal effects in the cited study.

In order to support the view that pyrethroids are toxic, Das et al. provide statistics on occupational illnesses ascribed to pesticides from reports of the California Department of Health Services. While this information is interesting, it does not shed light on the toxicity of permethrin or phenothrin or, in fact, of any pyrethroids in humans and certainly not after the very low exposure of passengers or crews on aircraft. In fact, it is surprising that the number of cases linked (with no causality proven) to pyrethroid use is only 15% of all pesticide incidents, considering the very widespread use of pyrethroids and the fact that the general conception of their harmlessness is likely to lead to careless use and thus to high exposure.

At present, there is no information that would contradict WHO's advice that aircraft disinsection is necessary when there is a risk of vector spread (*5*) and that permethrin and phenothrin, when used for this purpose in accordance with WHO recommendations (*2*), are safe. It is equally clear that any use of pesticides for public health purposes — such as pyrethroids for aircraft disinsection — should only be encouraged when they are effective against spreading a serious disease. It is also well known that pyrethroids may cause irritation and other skin effects, which are annoying but of short duration and without serious consequences, and that these effects can and should be minimized by keeping the exposure in aircraft disinsection to a practical minimum. Pyrethroid pesticides are available which have far fewer local adverse effects (e.g. etofenprox); tests should be carried out to determine their efficacy and suitability for aircraft disinsection. Above all, passengers and aircraft crews should be informed of the serious health risks of *not* disinsecting aircraft. ■

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Conflicts of interest: none declared.

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Rubella immunization strategies in the state of São Paulo, Brazil

Editor – In a recent issue of the *Bulletin*, Sheila Davey comments on the strategy to tackle vaccine-preventable diseases (*1*). She highlights the fact that key operational and scientific issues should be taken into consideration when choosing an immunization policy.

In Brazil, a major immunization campaign targeting all children 1–10 years of age was launched in the state of São Paulo in 1992, through which the measles–mumps–rubella (MMR) vaccine was delivered to 96% of the target population. This was followed by the inclusion of MMR vaccine in the routine immunization programme at 15 months of age (*2*).

Since then, the total number of rubella and congenital rubella syndrome (CRS) cases in the state of São Paulo has decreased considerably. However, the majority of rubella cases previously occurred in the age groups 10–14 years and 15–19 years and now occurs at ages 15–19 years and 20–29 years: in 2000, 58.5% of rubella cases in the state of São Paulo occurred in individuals aged 20–29 years (*3*). This demographic modification increases the chances of rubella in pregnant women, thus increasing the risk of CRS cases.

Mothers accompanying children to the Paediatric Emergency Unit of the Hospital of the Federal University of São Paulo in June–November 2000 were invited to participate in a study to assess the prevalence of rubella IgG antibodies in women of childbearing age. Seven out of eighty mothers (8.7%) did not have protective IgG antibody levels against rubella (above 13 IU/mL), as assessed by a commercial enzyme immunoassay kit (BioChem Immuno-Systems, Italy). All the women who were susceptible to rubella were over 18 years of age.

These results reveal an impressive percentage of women of childbearing age who were not targeted by the immunization programme launched in 1992. In fact, the figure is not very different from the 9.2% of susceptible women between 20 and 34 years of age in the state of São Paulo before the launching of the programme (*4*). In 1997, Robertson et al. had already highlighted that it was essential to include vaccination of women of child-bearing age in any rubella control strategy because childhood vaccination alone might pose a risk of an increase in CRS cases (*5*).

Much has been said about missed opportunities in rubella immunization strategies. Situations such as premarital, postpartum, postabortion and occupational opportunities have always been considered moments to vaccinate susceptible individuals, especially women of childbearing age. However, this approach has not always proved to be effective. Other strategies such as mass vaccination campaigns targeting both male and female adults might be necessary to avoid CRS cases and, eventually, to eradicate rubella. ■

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Acknowledgements
The work was funded by the Fundo de Auxilio ao Docente e ao Aluna (FADA), a Brazilian funding agency linked to the Federal University of São Paulo.

Conflicts of interest: none declared.

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