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Severe toxicity following inhalational exposure to N, N-diethyl-meta-toluamide (DEET)

Dear Editor:

We appreciate the response in regard to our article "Bug Off! Severe Toxicity Following Inhalation Exposure to N, N-diethyl-meta-toluamide (DEET)" [1]. We reported a patient with severe toxicity following inhalational exposure to an insect repellant containing 98% DEET. After discussion with Dr. Nikiforov, it was confirmed that the source of DEET was not a home insect fogger but rather a continuous spray repellant. Although designed for application to the skin and clothing, the patient used the spray indoors in a small enclosed mobile home. The patient was last seen normal by family members 24 h prior to presentation, and was in good general health. Given the uncertainties associated with many confusing ED presentations in older patients we do not know how much of the repellant was used or how it was applied. Based on the data presented in Fig. 1, it is likely that the route of exposure was by toxic inhalation [1]. There have been no previous reports of severe DEET toxicity following inhalational exposure.

Although case reports of toxicity or clinical symptomology stemming from DEET exposure are rare considering the number of applications, it has been shown to have various sublethal effects after topical exposure, including effects on skin, action on the cardiovascular system, and neuropathologies [2]. Encephalopathies observed from either chronic or acute exposures to DEET include tremors, hypertonia, seizures and coma [3]. Lethal cases of DEET poisoning are few, and usually due to deliberate or other overdoses that ignore product instructions [2]. It is apparent that our patient did not follow label directions.

As any clinician in Emergency Medicine can attest, people forget, or decline, or flat out refuse, to read the directions. Examples include owner's manuals for snowblowers, prescription medicine directions, hospital discharge instructions or product labels. This information may be critical to using a product safely, yet people would rather not do something that takes time and effort, like follow instructions [4]. The future challenge for manufacturers will be to provide information in a way that is more likely to be read or viewed and understood and followed. On discharge from the hospital, the patient featured in our case report expressed concern that the public was not more aware of the dangers of accidental DEET toxicity.

Toxic exposure is not always the user's fault. Brad Riley, a medical toxicologist in our institution, reported on a case of DEET toxicity occurring in a 69-year-old man who lived as a nudist in a cabin in the woods [5]. He would spray his entire body liberally with 30% DEET daily. On the day of incident he used a new bottle, but due to a faulty nozzle, the entire bottle discharged in a single spray onto his chest and back. He quickly became ill with nausea, vomiting, and diarrhea. On arrival to the ED he was confused, dyspneic, and generally weak. Fluid rehydration was begun, but due to increasing weakness he was subsequently intubated and mechanically ventilated. He required hemodialysis for worsening renal insufficiency and lactic acidosis. A drug screen was positive only for DEET, and a subsequent blood DEET level of 130 ppb was obtained. He recovered after a prolonged hospital stay, without other cause for illness identified.

In summary, efficacy (and safety) of insect repellents are markedly affected by several factors. These include ambient temperature, amount of exposed skin, age of user, concentration and form of repellent, clothing worn, and other factors [3]. This has prompted a number of consumer groups and professional organizations to publish safety and prevention guidelines which are readily available to the public, but they have to be read and followed.

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