

DERMAL EXPOSURES TO SARIN IN MILITARY VETERANS AT PORTON DOWN

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Background The modification of dermal exposures by clothing, which may either protect from exposure or increase its effect, is of considerable interest. Here, we describe early analyses of the effects of dermal exposures to the nerve agent sarin, using data drawn from our previous cohort study of military veterans of chemical tests at Porton Down between, 1939-1989.

Methods Data on exposures were abstracted from the Porton Down historical archive. For each nerve agent test we abstracted data on date and type of test, the principal chemical(s) used and exposure intensity, duration and route. We also noted the presence of exposure modifiers. Maximum percentage change in the following cholinesterase (ChE) measures were abstracted or calculated: unspecified, whole blood, plasma and/or red blood cell (RBC) ChE.

Results 3597 veterans were recorded as involved in 4299 tests with nerve agents, 1945-1987. The most tested nerve agent was sarin: 2980 veterans were involved in 3511 tests. 288 sarin exposures were dermal (9.6%) and most of those were modified physically, eg by clothing (188; 65%). Dermal sarin tests took place 1951 - 1953.

Quantity of exposure to dermal sarin was measured for 273 tests and ranged from 0.13 to 300 mg. Applied exposures were higher in tests with modification (IQR 200-300 mg with modification and 0.28-8 mg without).

Change in ChE activity was available for 279 dermal sarin tests (97%). The median change was -22% (IQR -10 to -37%, range +12.5 to -99%). The median without modification was -4.5% (IQR 0 to -13%) and -31% (IQR -19 to -46%) with modification.

Conclusions The quantity of dermal exposure to sarin influenced effect. However, modifier use may be confounded by exposure so further investigation of the relationships between exposure, effect, and modification will be carried out.