

This article was downloaded by:

On: 29 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

## Sodium and Onium Persorate Salts as Decontaminants of Neutotoxic Organophosphorus Compounds

E. Torreilles<sup>a</sup>; H. J. Cristau<sup>a</sup>; J. F. Ginieys<sup>a</sup>

<sup>a</sup> Ecole Nationale Supérieure de Chimie, Montpellier, France

**To cite this Article** Torreilles, E. , Cristau, H. J. and Ginieys, J. F.(1990) 'Sodium and Onium Persorate Salts as Decontaminants of Neutotoxic Organophosphorus Compounds', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 51: 1, 406

**To link to this Article:** DOI: 10.1080/10426509008040933

**URL:** <http://dx.doi.org/10.1080/10426509008040933>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## SODIUM AND ONIUM PERBORATE SALTS AS DECONTAMINANTS OF NEUTROTOXIC ORGANOPHOSPHORUS COMPOUNDS

E.TORREILLES, H.J.CRISTAU and J.F.GINIEYS  
École Nationale Supérieure de Chimie, 8 Rue de l'Ecole  
Normale, 34075 Montpellier, France

We compare the Sodium Perborate and various Phosphonium and Ammonium Perborates in their abilities to hydrolyse a series of phosphoric and phosphonic acid esters [OP].

We point out the participation of the Perborate anion as effective and active species in nucleophilic attack on neutral esters [OP] under mild conditions.

The rate constant equation  $K_{obsd}$  (eq.1), supported this participation, confirming its identification as a "  $\alpha$  - effet".

$$(eq.1) K_{obsd} = -d[OP]/dt = (K_s[H_2O] + K_{OH}[HO^-] + K_{HOO}[HOO^-] + K_{BOO}[BOO^-]) [OP].$$

Our study shows a relationship between activity of the  $BOO^-$  anion and the nature of the counter-ion  $P^+R_4$  or  $N^+R_4$ . The tensioactive properties of some  $P^+R_4 BO_3^-$  salts with lipophilic long chain alkyl groups R, permit that a micellar catalysis takes place in the hydrolysis of such esters [OP]. Then an important rate enhancement is observed.