

Introduction to Piratox and Piratome sheets

The Piratox and Piratome sheets are intended for healthcare professionals likely to be called in case of a nuclear, radiological or chemical event. They have been drafted with a view to directing and describing the recommendations and emergency therapeutic responses to be implemented in the event of terrorist attacks, malicious acts or industrial accidents involving nuclear, radiological or chemical materials (whether for warfare or industrial). They are primarily aimed at emergency medicine and resuscitation services, health and medical emergency services, but also for healthcare professionals in emergency and intensive care units and in poison control centers. They pertain both to the pre-identification phase (probabilistic attitude) and to the post-identification phase of the aggressive agent or agents involved. The sheets can be used as a technical base for planning medical counter-measures in this field. Nuclear, radiological and chemical threats or risks are permanent and are subject to continuous planning, as illustrated by the recent revisions to french circulars 700 and 800¹ of the french general defense and national security secretariat (SGDSN). These circulars specific to nuclear, radiological and chemical (NRC) risks, describe the organization of emergency services, and with the methods for treating victims in the field.

These sheets were drafted under the aegis of the Afssaps, the French competent authority in matters pertaining to healthcare products. They list the regulatory data from the marketing authorizations (MA) when these have been granted, or from usual therapeutic practices outside of regulatory frameworks, resulting from a consensus within an Afssaps ad hoc expert group bringing together representatives or members of emergency services, fire departments, military health services, the French Institute for Radioprotection and Nuclear Safety (Institut de Radioprotection et de Sûreté Nucléaire - IRSN), poison control centers and medical intensive care services. As knowledge in NRC fields is patchy and subject to change, numerous questions remain unanswered and much work is currently under way to provide these answers. The Piratome and Piratox sheets are also open-ended and information not currently available, or of which knowledge is still lacking, is also reported. The sheets primarily cover the routinely available antidotes for which an MA or clinical experience is available. This work also takes into account the antidotes making up french strategic stocks. Nevertheless, as these stocks are subject to change and due to the fact that antidote availability, outside of national stocks, may vary locally, users should check availability.

¹ Circular no. 700/SGDN/PSE/PPS of November 7th 2008 relative to the national doctrine for the use of emergency services and care in the event of terrorist action involving chemical materials, and Circular no. 800/SGDN/PSE/PPS of April 23rd 2003, relative to the national doctrine for the use of emergency services and care in the event of terrorist action involving radioactive materials.

The aim of the Piratox and Piratome sheets is to complete the work and assessments, completed or in progress, on the subject of NRCs and the instructions of french SGDSN circulars 700 and 800, providing detailed descriptions of decontamination procedures, a brief overview of which is presented below.

Overview of decontamination procedures (cf. french circular 700¹)

Besides the extraction of victims from the hazard area, decontamination is an integral part of victim treatment and the decontamination procedure is adapted to the clinical condition of each individual: valid victim, disabled victim or involved. An agent's contamination potential is dictated by its persistence in powder, more or less viscous liquid form and by the elements that it was in contact with (objects, clothing, skin, etc.), thus leading to its transfer to persons or objects not initially in the dispersion area. Emergency decontamination (as defined in french circular 700), combined with emergency care and medical stabilization procedures (symptomatic treatment, administration of antidotes), takes priority. In the case of a nuclear or radiological event, medical-surgical emergency takes precedence over the radiological emergency. In this case, the most serious victims (extreme emergencies) are directed to a healthcare establishment prepared to receive them.

Decontamination is achieved by systematic undressing, followed by a shower if necessary. We can distinguish on the one hand:

- 1) emergency decontamination, by adsorption (e.g.: swabbing with a powdering glove containing fuller's earth or, failing this, with absorbent paper) on the face and exposed or visibly contaminated parts of the body, by applying an individual air filtration device, by removing the outermost layer of clothing, at the least, along with the shoes and storing the victim's personal effects in a sealed bag and, on the other hand:
- 2) thorough decontamination (if necessary) including complete undressing² and a shower. In a compromise between expected effectiveness and throughput (number of victims per hour), the duration of the shower is currently set at 3 minutes to ensure adequate decontamination. Victims are then dried by swabbing, then dressed in disposable clothing.

²Example of a lot for undressing, and re-dressing of valid victims, whether symptomatic or not. In one individual bag: 1 procedure sheet with drawings / 1 sealed 100-litre bag / 1 sealed 30*40 cm translucent zip lock bag for personal effects / 1 survival blanket / 1 powdering glove or equivalent / 1 tool for cutting clothing / 1 set of disposable clothes (take climatic conditions into consideration) / 1 paper hat / 1 pair of gloves / 1 FFP3 face mask or 1 escape hood / several identification devices used to trace the victim and his/her personal effects (Circular 700, appendix 20).

The therapeutic recommendations cover:

1) *Treatment of intoxication with chemical agents (PIRATOX sheets with entry by chemical agent category):*

- Piratox sheet no. 1 "Cyanides and cyanide derivatives".
- Piratox sheet no. 2 "Hydrogen arsenide or arsine"
- Piratox sheet no. 3 "Lewisite".
- Piratox sheet no. 4 "Organophosphates: neurotoxic weapons and pesticides".
- Piratox sheet no. 5 "Suffocating agents and phosphine".
- Piratox sheet no. 6 "Yperite and other vesicant mustard agents".

2) *Treatment of internal contamination with various radionuclides (PIRATOME sheets with entry by antidote, with sheet no. 1 used to direct the choice of antidote):*

- Piratome sheet no. 1 "Treatment principles and choice of antidote".
- Piratome sheet no. 2 "Prussian Blue".
- Piratome sheet no. 3 "DMSA/BAL".
- Piratome sheet no. 4 "DTPA".

These therapeutic recommendations have been deliberately limited to the treatment of victims during the first 24 hours, both at the site of the event and in healthcare establishments. The expertise possibly required for treatment beyond the initial 24 hours shall be obtained in the usual manner, by contacting the appropriate expertise resources (poison control centers, radioprotection centers, military health service, etc.).

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These sheets were approved by the French Medicine Agency – Marketing Authorization Commission on October 7th 2010.