



## **DANGEROUS GOODS PANEL (DGP)**

### **TWENTY-FIFTH MEETING**

**Montréal, 19 to 30 October 2015**

**Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284)* for incorporation in the 2017-2018 Edition**

### **REQUIREMENTS FOR STERILIZATION DEVICES CONTAINING NITROGEN DIOXIDE (UN 1067), NITRIC OXIDE, COMPRESSED (UN 1660) AND NITRIC ACID (UN 2031)**

(Presented by the Dangerous Goods Advisory Council (DGAC))

#### **REVISED**

#### **SUMMARY**

The DGP is invited to consider adopting two new special provision authorizing the transport on passenger and cargo aircraft, small quantities of Nitrogen dioxide (UN 1067), Nitric oxide (1660) or Nitric acid (UN 2031) when contained in sterilization devices. This paper is based on discussions at DGP-WG15 on the subject (see paragraph 3.2.3.3 of the DGP-WG/15 Report) and incorporates the comments made by panel members at that meeting.

This type of medical service equipment eliminates the need for electric supply in remote area health care applications and is considered a considerable technical advance with significant public health implications. The Technical Instructions have included provisions for sterilization devices containing substances normally forbidden on aircraft for a number of years with no reported difficulties. It is proposed to provide a similar solution for sterilization units containing the gases Nitrogen dioxide and Nitric oxide and liquid Nitric acid at concentrations less than 65%. The maximum quantity per inner package would be 30 mL with a maximum outer packaging quantity of 1 L.

Two separate special provisions are proposed, one for gases, the other for liquids

**Action by the DGP:** The DGP is invited to agree to the amendments proposed in paragraph 2 of this working paper.

## 1. INTRODUCTION

1.1 At DGP-WG/14, DGAC presented an information paper (DGP-WG14-IP/4) which described a new technology which has been developed which simplifies the process of field sterilization of medical equipment. A chemical process replaces the need for electric power supplies which are sometimes difficult to provide in the conditions often encountered where these devices are deployed. Section 1 of DGP-WG14-IP/4 describes the intended use in detail.

1.2 At DGP-WG/15, a formal working paper was submitted and the feedback of panel members was requested with a view to re-submitting the proposal at DGP/25 (see paragraph 3.2.3.3 of the DGP-WG/15 Report). Several panel members provided substantive feedback on the proposal and these concerns have been incorporated in this working paper. A request to introduce two separate papers has not been adopted since it is believed the work of the panel would be facilitated by consolidating the background subject matter while addressing the specific proposals separately. In consequence, Proposal 1 addresses the gases, Nitrogen dioxide (UN 1067) and Nitric oxide (UN 1660); Proposal 2 addresses Nitric acid, less than 65%; Proposal 3 addresses any consequential amendments which the Panel might like to consider.

1.3 Historically, small inner receptacles (30 mL) of substances normally forbidden on aircraft used for sterilization devices have been permitted on passenger and cargo aircraft for a number years without incident. It is proposed that a similar mechanism be provided for the transport of other substances employed in sterilization devices. The special provisions provide a high level of package integrity while limiting the quantities to those used for excepted quantities of dangerous goods.

1.4 Appendix B of DGP-WG/14-IP/4 illustrates the type of equipment which employs these cartridges.

1.5 Current field distribution of these sterilization devices ranges from a single box of up to 32 units to ten to twelve. Field use includes normal day-to-day medical care in remote areas to major incident response.

2. **ACTION BY THE DGP**

2.1 The DGP is invited to agree to the following amendments:

a) **Proposal 1**

Assign the following new Special Provision A2XX to the entries UN 2037 — **Gas cartridges** (toxic) without a release device, non-refillable and UN 2037 — **Receptacles, small, containing gas** (toxic) without a release device, non-refillable:

A2XX Receptacles, small containing gas (toxic, oxidizing and corrosive) or Gas cartridges (toxic, oxidizing and corrosive) which are intended for use in sterilization devices only, when containing not more than 30 mL of:

- a) UN1067 – nitrogen dioxide; or
- b) UN1660 – nitric oxide, compressed

may be transported on passenger and cargo aircraft irrespective of the indication of “forbidden” in columns 10 to 13 of Table 3-1, provided:

- a) each gas cartridge is designed such that the burst pressure is not less than four times the pressure in the cartridge at 55°C;
- b) the gas cartridge(s) are packed in a compatible, sealed intermediate packagings with sufficient adsorbent material capable of containing contents of the gas cartridge;
- c) the gas cartridge(s) are secured in a rigid outer packaging;
- d) the completed package meets the Packing Group I performance requirements of Part 6; Chapter 1;
- e) the maximum quantity of gas in the package does not exceed 1 L; and
- f) the statement “Transport in accordance with Special Provision AXXX” is noted on the dangerous goods transport document.

b) **Proposal 2**

Assign the following new Special Provision A2YY to the entries UN 2031 — **Nitric acid**, other than red fuming, with more than 20% and less than 65% nitric acid, Packing Group II:

A2YY Sterilization devices when containing UN 2031 — Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid, Packing Group II may be transported on passenger aircraft provided:

- a) each inner package contains not more than 30 mL;
- b) each inner packaging is contained in a sealed leak-proof intermediate packaging with sufficient absorbent material capable of containing contents of the inner packaging;
- c) the inner packagings are placed in a rigid outer packaging that meets the Packing Group I performance requirements of Part 6; Chapter 1;
- d) the maximum quantity of Nitric acid in the package does not exceed 1 L; and
- e) the statement “Transport in accordance with Special Provision AYYY” is noted on the dangerous goods transport document.

c) **Proposal 3 — Consequential amendments**

1) Add a light type entry to Table 3-1, “Nitrogen dioxide and nitric oxide contained in gas cartridges for use in sterilization devices, see **Gas cartridges** (toxic, oxidizing and corrosive) without a release device, non-refillable, or **Receptacles, small, containing gas** (toxic, oxidizing and corrosive) without a release device, non-refillable.

2) Amend Part 5;4.1.5.8 as follows:

4.1.5.8.1 The dangerous goods transport document must also contain:

- a) except for radioactive material, the packing instruction applied. For shipments of lithium batteries prepared in accordance with Section IB of Packing Instruction 965 or Packing Instruction 968, the letters “IB” must be added following the packing instruction number;
- b) when applicable, reference to Special Provision A1, A2, A4-~~or~~, A5, A2XX and/or A2YY as applicable;

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