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**COMMITTEE OF EXPERTS ON THE TRANSPORT OF
DANGEROUS GOODS AND ON THE GLOBALLY
HARMONIZED SYSTEM OF CLASSIFICATION
AND LABELLING OF CHEMICALS**

Sub-Committee of Experts on the
Transport of Dangerous Goods

Thirty-second session
Geneva, 3-12 (a.m.) December 2007
Item 3 of the provisional agenda

LISTING, CLASSIFICATION AND PACKING

Class 8 - Exemption of Batteries (Alkali-Manganese-, Zink carbon-, Nickel-Metal hydride
and Nickel-Cadmium-Batteries as well as Button cells, UN No. 3028)
from the provisions of the UN Model Regulations

Transmitted by the expert from Germany^{*/}

Introduction

1. During the eighteenth session of this Sub-Committee, document ST/SG/AC.10/C.3/2000/25 and its corrigendum submitted by the expert of Germany was discussed and the proposal to add a new special provision to UN 3028 was adopted (see ST/SG/AC.10/C.3/36, para. 45 and annex 2).

2. Experience with this special provision, however, showed that it could create some confusion in interpretation. The batteries addressed by this special provision (alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries) are in general designated for

^{*/} In accordance with the programme of work of the Sub-Committee for 2007-2008 approved by the Committee at its third session (refer to ST/SG/AC.10/C.3/60, para. 100 and ST/SG/AC.10/34, para. 14) (listing and classification).

private use. They do not contain potassium hydroxide as a solid but potassium hydroxide solution absorbed by the solid contents of the battery. Thus these batteries do not meet the definition of UN 3028. They even should not be considered to fall under class 8 due to the small quantity of corrosive material secured in the solid material of the battery.

3. To make the issue more clear and user friendly the text of the special provision 304 should be revised to describe in a positive way the type of battery covered by UN 3028. The wording of the special provision should be adapted to the respective wording in the attachment 2 of the ICAO-TI: "BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE, SOLID. Storage batteries filled with potassium hydroxide, solid which are shipped from the factory in their original dry state and filled with dry alkali. Water would be added to the battery before first being used."

4. Although nickel-metal hydride batteries are not considered to fall under class 8, this type of batteries requires specific precautions during sea transport because stowage near sources of heat may initiate the hazardous decomposition of the batteries. In May 2005, en route from Asia to Europe a fire broke out on board a German container vessel. The investigation carried out by the Federal Bureau of Marine Casualty Investigation revealed that the fire started around containers loaded with nickel metal hydride storage batteries which are commonly used in technical household equipment and consumer electronics. The batteries were securely packed and protected against short-circuits. Corrosive electrolyte could not flow out. Two containers fully packed with such batteries were stowed deep inside a hold facing heated tanks, equipment and piping for ship's fuel. Inside the containers, temperatures of about 70 degrees Celsius had been estimated after the accident. Such situations within holds are not uncommon according to classification society statements. The technical investigation concluded that under such temperatures over long periods such batteries lost their leakage-proof properties and the plastic used for packing melted or even liquefied. The temperatures of the cargo inside the container rose as the full protection against short-circuit failed under such conditions. According to industry notes and scientific evaluation hydrogen developed. According to the investigation, short-circuits ignited the hydrogen/air atmosphere leading to explosion and/or fire.

5. To distinguish these Nickel-Hydride portable accumulators from those of UN 3028 a new UN number should be introduced within the UN Model Regulations. This UN number should be assigned to class 9 because the material inside the batteries does not show any properties of classes 1 to 7 and contains only a small quantity of potassium hydroxide which usually is absorbed in a way that no corrosive electrolyte can flow out.

6. Because these Nickel-Hydride portable accumulators require specific precautions only when transported by sea and stowed close to sources of heat a new special provision should be added to this new UN number to say that these batteries are only dangerous goods when transported by sea. A corresponding German proposal was therefore submitted for DSC 12.

Proposal

7. Amend special provision 304 to read as follows:

“This entry applies to storage batteries filled with potassium hydroxide, solid which are shipped from the factory in their original dry state and filled with dry alkali. Water would be added to the battery before first being used.”

8. Add a new UN number under class 9 to read as follows:

“UN XXXX BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE (NICKEL-HYDRIDE PORTABLE ACCUMULATORS)”.

9. Add a new special provision to this new UN number to read as follows:

“This entry applies to batteries used for households only containing potassium hydroxide solution absorbed by the solid contents of the battery covered in a way that no corrosive electrolyte can flow out. These batteries are subject to these Regulations only when transported by sea.”
