**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**

**Fifty-seventh session**

Geneva, 30 November-8 December 2020

Item 3 of the provisional agenda

**Listing, classification and packing**

Request for a new UN number for cobalt dihydroxide powder

Transmitted by the Responsible Packaging Management Association of Southern Africa (RPMASA) and the International Confederation of Plastic Packaging Manufacturers (ICPP)

Revision of ST/SG/AC.10/C.3/2020/21/Rev.1

I. Introduction and background

1. At the fifty-fifth session RPMASA introduced in informal document INF.24 a new challenge experienced for packaging and transport of cobalt dihydroxide, through the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)[[1]](#footnote-2) regulation requirement for comprehensive GHS testing which had resulted in the drastic change to the transport classification from Class 9, UN 3077 ENVIRONMENTALLY HAZARDOUS SOLID, N.O.S. packing group (PG) III, to Division 6.1 TOXIC SOLID, BY INHALATION, Category 1, and PG I for which there was currently no UN number.

2. This presented a serious challenge as thousands of tonnes of cobalt dihydroxide in various forms have been transported safely over the past forty years as UN 3077 ENVIRONMENTALLY HAZARDOUS SOLID, N.O.S. (contains cobalt dihydroxide) Class 9, in flexible IBCs of PG III. The cobalt dihydroxide ranged from crude material from the mines in Africa to refined material in Europe and other parts of the developed world, by multi-modal means in flexible IBCs, with no recorded accidents, incidents or health issues.

3. A new UN number assigning flexible IBCs, with an appropriate packing instruction and special conditions was requested, as flexible IBCs had not previously been assigned to PG I.

The challenge/problem and subsequent actions taken

4. Concern was expressed that through increasing harmonisation with the GHS this could be the first of other fine powders to be impacted by GHS and REACH, thus a solution was needed to ensure continued transport and trade of such goods, especially those that exhibit no other physical hazards, and hence are not too dangerous to transport.

5. During discussions it was agreed that materials which do not emit dust, or particles outside of the respirable range, pose no hazard to inhalation, so would continue to be assigned to UN 3077 Class 9, PG III as ENVIRONMENTALLY HAZARDOUS, SOLID, N.O.S.

II. Discussion

6. Following discussion during an informal lunch time work group it was agreed by the SC to form an intersessional correspondence group, to progress this and to report back at the December 2019 session.

7. RPMASA reported the outcomes of the Intersessional deliberations to the TDG fifty-sixth session in December 2019 in informal document INF.19. A lunchtime discussion on Thursday 5December, was reported in INF.54.

8. It was agreed in plenary that the intersessional group would continue to progress this for a formal paper to be submitted to the July 2020 Session. It was also proposed that an entry should be included in the Guiding Principles to provide for future issues related to greater harmonisation with the GHS.

9. Following intersessional discussion, RPMASA prepared formal Document 2020/21 for discussion at the July 57th session, however when the July meetings were postponed due to Covid-19, a virtual discussion was held on 1 July at which the Cobalt Institute shared new information on physical attributes of cobalt dihydroxide for expert consideration, as these would impact of the behaviour of any release of material:

* Co(OH)2 has zero vapour pressure,
* Relative density is 3.6 g/cm3 – heavy, so does not remain in air for extended time,
* Hygroscopic – takes up water and tends to ‘clump together’ on exposure to air,
* The airborne fraction of bulk material has a low respirability, only 0.8% is modelled to deposit in the pulmonary (deep lung) region.

These attributes show very low potential for inhalation toxicity in humans, which is very different to test results in rats where the substance is introduced through a positive airstream.

This physical data supports the facts that this material has been safely transported for ***over 40 years in*** ***unlined FIBCs*** with no reported health effects.

10. The key outcomes of the virtual discussion were reported in informal document INF.20 which together with additional points from further intersessional exchanges were included in document ST/SG/AC.10/C.3/2020/21/Rev.1 which included agreement to:

* Remove SP 354 as only applicable to liquids and vapours not solids/powders
* To add new Special provision SP XXX and Special Packing provision Bx
* To consider a better definition for respirable
* To prepare wording for inclusion in the Guiding Principles

11. A number of delegations commented on the Workspace platform, proposing further amendments to be considered and included in the new proposal below.

III. Proposal

12. The Sub-Committee is invited to consider the revised proposal for a new UN number to be allocated for refined cobalt dihydroxide, classified as toxic by inhalation, Division 6.1 and PG I, with the specific Packing Instructions and Special Provisions as shown in the table below for “COBALT DIHYDROXIDE POWDER, [containing ≥ 10 % respirable particles].” Square brackets indicate statements which are for discussion as to whether needed, in light of proposed SP XXX.

Chapter 3.2, Dangerous Goods List

13. Insert a new entry in the list of dangerous goods, as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **UN No.** | **Name and description** | **Class**  **or division** | **Subsi-diary risk** | **UN packing group** | **Special provi-sions** | **Limited and excepted quantities** | | **Packagings and IBCs** | | **Portable tanks and bulk containers** | |
| **Packing instruction** | **Special packing provisions** | **Instructions** | **Special provisions** |
| 35XX | COBALT DIHYDROXIDE POWDER, [containing ≥ 10 % respirable particles] | 6.1 |  | I | SPxxx | 0 | E5 | P002  IBC07 | B1  Bx | T6 | TP33 |

Chapter 1.2, Definitions

14. Add a new definition for respirable for solids and powders, in line with 2.6.2.1.3, as follows:

“*Respirable particle* means a particle where the aerodynamic diameter of that particle is 10 µm or less.”

Chapter 2.6, Division 6.1 – Toxic substances

15. Amend 2.6.2.1.3, second sentence, as follows (deleted text is marked in ~~strikethrough~~; new text is underlined):

“A solid substance shall be tested if at least 10 % (by mass) of its total mass is likely to be dust in a respirable range (see definition of respirable particle in 1.2.1)~~, e.g. the aerodynamic diameter of that particle-fraction is 10 microns or less~~.”

Chapter 3.3, Special provisions

16. Add a new special provision to qualify that solid materials with < 10 % respirable particles classify as follows:

“SP XXX Solid cobalt dihydroxide powder/s containing < 10 % respirable particles that do not classify as Division 6.1, and no other attributable hazards, is assigned to UN 3077 Class 9, PG III ENVIRONMMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains cobalt dihydroxide).”.

Alphabetical Index of substances and articles

17. Add new entry UN 35XX to the alphabetical index

Chapter 4.1.4.2 Packing instructions concerning the use of IBC’s

18. Under IBC07, add point “(5) Flexible (13H3 and 13H4 that have passed PG I testing)” and insert a new special packing provision “Bx” to read as follows:

“**Bx** UN 35XX may be transported in flexible IBCs (13H3 or 13H4) with sift-proof liners to prevent any egress of dust during transport.”

Guiding Principles - Proposal for addition to Part 2 and Part 4.2

19. It is proposed to introduce a new wording into the Guiding Principles, in parts 2 and 4.2. Following comments received on the Workspace platform, the Sub-Committee is requested to consider the alternate options below -

Part 2

**Option 1:** Propose to add wording at the end to inform, and provide guidance for future packaging assignment issues related to increasing harmonisation with the GHS, as follows –

“The basis of the classifications described above used testing methods and criteria appropriate to the period when they were developed. However, with the emergence of GHS and other chemical regulations such as REACH, new test methods and methods of assessment may result in the reclassification of certain substances.

When such evidence is presented to the Sub-Committee, it may decide that the existing entry provides sufficient safety in transport and that no material change is required (an SP may be added to the entry to acknowledge the alternative data and confirm the DG list entry).

Where the Sub-Committee agree that a new or amended entry is appropriate then the Sub-Committee may take into account previous experience with the packing and transport safety record for that substance. Such considerations may result in the allocation of packaging, IBC and tank instructions not strictly in accordance with Part 4 of these Guiding Principles.”

**Option 2:** Alternately, **amend the last paragraph of Part 2 of the Guiding Principles** as follows with proposed new wording underlined –

“In principle, substances listed by name in column 2 of the Dangerous Goods List should be transported according to the classification indicated in the list.

It may happen that new or additional test data provided by experts (e.g. national authorities, industry stakeholders) show that a substance possesses one or more additional or different hazards not identified in the list. In such a case, a consignor who is aware of this or these additional or different hazards identified on the basis of test data, may – with the approval of the competent authority and provided that the competent authority has confirmed that it would take steps to inform the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods with the view to amending the current classification of the substance – elect to:

- Use the most appropriate generic or N.O.S. entry to ensure that all hazards are communicated during transport;

- Use the same UN number and shipping name but to reflect the additional or different hazard(s) in the various hazard communication elements required by the Model Regulations (labels, placards, transport documents) provided that the additional, or, different hazard(s) would not justify more stringent transport conditions other than those related to hazard communication.”

Part 4.2

Propose to add wording in division 6.1, and after the table for IBC Packing Instruction assignments as follows -

In table 4.2, for division 6.1, under solids without subsidiary risk, add a second entry to read

“UN 35XX COBALT DIHYDROXIDE POWDER, containing ≥ 10 % respirable particles, PG I and IBC07b”

and add a new note b at the end of the table

**Option 1:** Note

“b For UN 35XX, an exemption was agreed to allow and assign IBC07 for transport in FIBCs of 13H3 or 13H4. This was based on the fact that cobalt dihydroxide powder has no other transport hazards and had been transported safely in unlined FIBC’s of PG III for more than 40 years as non-hazardous and then UN 3077 until full GHS Classification was required under REACH Registration. This led to reclassification of this substance as toxic by inhalation, which then created a change from UN 3077 Class 9, packing group III to Division 6.1, packing group I.”

**Option 2:** Alternate wording for the Note

“b For more details on the assignment of IBC07 (for transport in FIBC’s of 13H3 or 13H4) to UN 35XX COBALT DIHYDROXIDE POWDER, Division 6.1, PG I, please consult working paper ST/SG.AC.10/C.3/2020/21/Rev.1 as amended by informal document INF.45 of the 57th session of the TDG Sub-Committee.”

1. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006. (Official Journal of the European Union, L396). [↑](#footnote-ref-2)