



Brussels, August 28th, 2003.

Mrs. L. De Backer,

Ministry of Social Affairs
Belgian Federal Department of
The Environment
Public Health and Environment
Service of Risk Management
Rijksadministratief Centrum
(Koningslaan – Congres)
Vesalius (Blok C) , local V 2/3 04
Pachécolaan 19 B 5
B-1010 Brussels

Subject.
Regulation 793/93/EEC
3rd priority list
Cadmium metal and cadmium oxide
Risk Assessment Conclusion (i).

Ref. Your registered letter of August 11th, 2003.
Answering PART A : Soft Water.
PART B. Sediments and Cadmium Bioavailability

Dear Mrs. De Backer,

PART A. Soft Water

A1. Introduction.

In an e-mail addressed by Mr. F. Van Assche to Mrs. L. De Backer, on March 6th, 2003, and as expressed on several occasions during TMs, Industry has indicated that there is no need for complementary testing on the cadmium toxicity in soft waters. The justifications for this position will be developed below. After analysis of the proposed test program, Industry also concluded that whatever the results of these tests, the current conclusions drawn in the RAR (based on the current PNEC of 0,08 µg/L) on the risk for the environment related to the presence of cadmium in soft waters will not change.

A 2. Appropriate data on the toxicity of cadmium in soft waters are available.

As shown in the Figure 3.2.3 of the final draft RAR on Cadmium (environment section), para. 3.2.1.6.4 PNEC_{water} as a function of water characteristics, relevant data on cadmium toxicity are available and this set of data leads the Rapporteur to conclude that the PNEC value of 0.08 µg Cd/L is protective for soft waters (page 185, quote in bullet point 3).

The studies referenced in the Cadmium RAR, Lawrence and Holoko, 1991; Malley and Chang, 1991, are conducted in Canadian experimental lake systems with physico-chemical properties that are comparable to soft water lakes in EU Nordic lakes, and therefore relevant for assessing cadmium toxicity in those lakes. Hardness values range from 6 to 11 mg CaCO₃/L¹, the pH is near neutral, DOC is on average 8 mg/L, and background cadmium levels are very low (0,001-0,005 µg/L).

It is worth recalling that the Canadian mesocosm studies are carried out on whole lake systems. These studies were specifically designed to assess cadmium toxicity in soft water lakes. Cadmium was added for evaluation of the toxicity threshold level which was experimentally found at 0.20 µg Cd/L confirming that a PNEC of 0.08 µg Cd/L is protective for soft waters in Nordic countries.

Conclusion

Reliable data are available at very low hardness (<10 mg CaCO₃/L).

Current RAR established PNEC of 0,08 µg/L is protective for soft waters.

A 3. Cadmium in soft waters: a local issue.

In EU Nordic countries, cadmium concentrations in soft water lakes can be significantly higher than the current PNEC in the Cd RAR (0,08 µg/L).

Two regions with soft water lakes and cadmium concentrations above the background range (0,01 – 0,05 µg/L –and above the current PNEC of 0,08 µg/L for that matter) have been identified (using the NIVA survey, 1999).

- 1) Southern Norway is the region with the highest cadmium levels, ranging between 0,1 – 0,3 µg/L total cadmium. Southern Norway is also known to have lakes with very low buffering capacity, low pH (4–5) and extremely low hardness levels (below 5.0 mg CaCO₃/L).

¹ Hardness in mg CaCO₃/L was calculated based on the actual Ca and Mg concentrations in the experimental lakes, for the relevant years (personal communication with Susan Kasian of the Experimental Lakes Area, Fisheries and Oceans Canada Freshwater Institute).

- 2) Another region of concern is in Central Sweden, with total cadmium levels of 0,08 – 0,2 µg/L. This region has lakes with rather low pH (around 6) and typical hardness levels of 5-10 mg CaCO₃/L.

The origin of the higher cadmium concentrations can be traced back to the 1960 –1970 acidification of lakes with low buffering capacity which may have led to unusual cadmium release due to two phenomena:

- the deposition of anthropogenic long-range transported cadmium
- the mobilisation of cadmium due to lake acidification

These anthropogenic depositions are known to have been most significant during the 1960-1970 period.

Elevated cadmium values can also be found scattered across the Nordic countries, however these are attributed to local point sources.

The point remains, however, that a hypothetical lowering of the PNEC would not change the conclusions drawn in the RAR on the risk characterisation of such isolated cases.

Conclusions.

The lowering of the PNEC would not change the current RAR conclusions where a risk is declared at local scale for Nordic Lakes with low hardness.

The higher cadmium levels observed in certain Nordic lakes have no correlation with today's use patterns of cadmium or exposure profiles of cadmium.

A 4. Test procedure (TEST 302+303_env_B1_draft.doc).

The proposed test procedure suffers from several major uncertainties such as,

- the general concern about the validity of performing tests with added cadmium concentration levels close to background. The PNEC of 0,08 µg/L is already very close to the natural background concentrations found in Nordic countries (0,01-0,05 µg/L)
- as stated in the literature, below 0.1 µg Cd/L the precision level is influenced both by the contamination level of laboratory equipment and the relative uncertainty of the analytical procedure.

In addition, Industry expresses reservations on the test protocol regarding

- the cadmium salt used for testing,
- the testing waters selected as representative testing conditions,
- the number of tests.

Conclusion

Industry formally disagrees on scientific grounds, with the technical content of the testing proposal because testing at lower than the current PNEC of 0,08 µg/L is highly questionable in terms of providing reliable and useable results and in terms of environmental relevance at the regional scale.

PART B. Sediments and Cadmium Bioavailability

In our message addressed to you on May 14th, 2003, we have kindly requested that the results of the bioavailability tests would to be taken into consideration in the RAR on cadmium and cadmium oxide.

As mentioned in your letter of August 11, the document entitled “Probabilistic assessment of Cadmium bioavailability in the sediment compartment “ was prepared by an independent consultant “EURAS” in December 2002 and communicated to you.

As you have probably been informed this document was prepared as a result of the current dedicated research program on zinc and metals bioavailability performed by the International Zinc Association in the framework of the Risk Assessment Report on Zinc.

In light of the most recent data obtained specifically on cadmium bioavailability, we have instructed EURAS to prepare a new report.

This document will be completed and made available to The Rapporteur at the latest mid-November 2003.

Yours faithfully.

M. N. G. Taylor
Executive Director
ICdA

F. Van Assche
Environment Advisor
to ICdA

Jean-Pol Wiaux
Manager
CollectNiCad

CC.

Mr. R. Moreau General Director - Ministry of Social Affairs
Belgian Federal Department of The Environment Public Health and Environment

Mr. H. Waeterschoot. Eurometaux