UNECE

Safety guidelines
and good practices for the management and retention of firefighting water

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FOREWORD

Over the past few decades, the level of safety at industrial facilities that produce, handle or store hazardous chemical substances has significantly improved in the United Nations Economic Commission for Europe (UNECE) region. Under the auspices of UNECE instruments,[1] frameworks and tools, many countries have stepped up their prevention, preparedness and emergency response measures regarding major accidents, in order to minimize the risks to people and the environment. However, preventing the release of contaminated firefighting water into the surrounding soil and water still presents a challenge, especially in the case of a major fire at an industrial facility. Extinguishing a blaze can take hours or even days, during which time a significant volume of contaminated firefighting water is produced and needs to be properly retained. If not, these discharges of polluted water can have devastating effects on humans and the environment, as demonstrated by several major accidents over the past 35 years.

A case in point is the Sandoz accident of 1986 — widely regarded as Europe's worst environmental disaster in decades. The lack of firefighting water retention facilities caused far-reaching transboundary water pollution across Switzerland, France, Germany and the Netherlands, affecting drinking water supplies and resulting in widespread ecological damage along the River Rhine for years. Despite the significant progress made in the field of industrial safety over the past few decades, the issue of firefighting water retention has still not been thoroughly addressed by countries across the region, meaning that a Sandoz-like disaster could happen today.

I am pleased that the Parties to two legal instruments serviced by UNECE — the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) — have been working together to address issues related to accidental water pollution and the protection of watercourses, namely through the Joint Expert Group on Water and Industrial Accidents. Acknowledging the challenges that countries face and the lack of guidance in this field, the Joint Expert Group has developed safety guidelines and good practices — as contained in this publication — to assist countries in minimizing the risk of fire and safely retaining firefighting water, in line with Sustainable Development Goal 3 on healthy lives and well-being, Goal 6 on water, Goal 9 on industry, innovation and infrastructure and Goal 15 on life on land.

[1] Notably the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), serviced by the United Nations Economic Commission for Europe (UNECE).

I would like to encourage Governments, competent authorities and operators to make extensive use of the guidelines in order to enhance existing practices and promote harmonized safety standards. Joint bodies and international organizations should also support this work by promoting the guidelines and assisting competent authorities and operators in their application.

I look forward to the guidelines' successful implementation, so as to prevent the accidental release of firefighting water into surrounding soils and waters and to limit the consequences on human health and the environment, both within and across borders.

Olga Algayerova

Executive Secretary

United Nations Economic Commission for Europe

BACKGROUND AND ACKNOWLEDGEMENTS

In 1986, as a result of a fire at the Sandoz pharmaceutical facility near Basel, Switzerland, 30 tons of toxic chemicals were released into the Rhine River owing to the lack of firefighting water retention. This caused extensive transboundary water pollution, suspended drinking water supplies, devastated fish stocks in Switzerland, France and Germany and had effects reaching as far as the Netherlands (approximately 700 kilometres downstream).

On the occasion of the twenty-fifth anniversary of the Sandoz accident, a UNECE seminar was held in Bonn, Germany, on 8 and 9 November 2011.[2] The event was organized under the leadership of the Government of Germany, with the support of the secretariat of the UNECE Convention on the Transboundary Effects of Industrial Accidents[3] (Industrial Accidents Convention) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes[4] (Water Convention). The objectives of the seminar were mainly the following:

- To reflect on the work carried out and progress achieved in the area of prevention of accidental water pollution in the UNECE region;
- To examine existing deficits in the prevention of water pollution by chemical substances, and formulate the way forward to address these deficiencies.

Following the presentations by the seminar participants, it became evident that 25 years after the Sandoz accident a number of countries were facing significant challenges regarding fire protection and the containment of firefighting water to prevent the contamination of transboundary rivers. These challenges were faced not only at storage facilities but at all other on-site activities, in particular processing plants. Most countries lacked specific legislation and regulations regarding the retention of firefighting water and size requirements for retention basins remained inadequate. Several fire accidents or near-misses in recent years supported those findings. It was therefore recommended to address the issue jointly through the development of related guidance. To that end, the Bureaux to the Water Convention and the Industrial Accidents Convention endorsed a proposal for the Joint Ad Hoc Expert Group on Water and Industrial Accidents to develop safety guidelines and good practices for firefighting water retention.

As a first step, a questionnaire was sent to all focal points of the two conventions to identify needs and available expertise in this area. Under the leadership of the Joint Expert Group, a small group of international experts on firefighting water retention was then established

2 For more information, please see http://www.unece.org/index.php?id=25376

3 United Nations, *Treaty Series*, vol. 2105, No. 36605.

4 United Nations, *Treaty Series*, vol. 1936, No. 33207.

and tasked with the elaboration of safety guidelines and good practices for the retention of firefighting water in the biennium 2017–2018. The present document contains these safety guidelines and good practices, which were developed by the Joint Expert Group in cooperation with the Expert Group on Fire-water Retention and supported by the UNECE secretariat. The Expert Group on Fire-water Retention held four meetings in 2017 and 2018[5] which were serviced by the secretariat. Previous versions of the safety guidelines were discussed at an international seminar on fire-water retention (Slubice, Poland, 5 September 2017)[6] and shared for comments with the focal points of the UNECE Water Convention and Industrial Accidents Convention, international organizations, industry associations and other partners in the last quarter of 2017. Their comments, inputs and feedback were considered by the expert group and, where feasible, included or otherwise addressed during the process of finalizing the guidelines. The Meeting of the Parties to the Water Convention at its eighth session (Astana, 10–12 October 2018) and the Conference of the Parties to the Industrial Accidents Convention at its tenth meeting (Geneva, 4–6 December 2018) took note of the guidelines and recommended their use and implementation by countries in order to prevent accidental pollution of soil and water, including pollution that could cause transboundary effects.

In the period during which the guidance was elaborated, the Joint Expert Group was co-chaired by Mr. Peter Kovacs (Hungary) for the Water Convention and Mr. Gerhard Winkelmann-Oei (Germany) for the Industrial Accidents Convention. In addition to the Co-Chairs, the following experts actively supported the development of the safety guidelines by providing inputs: Mr. Claes-Hakan Carlsson (Sweden); Mr. Pavel Dobes (Czechia); Mr. Jesper Hansen (Switzerland); Mr. Lukasz Kuziora (Poland); Ms. Leighanne Moir (United Kingdom of Great Britain and Northern Ireland); Ms. Cornelia Sedello (Germany); Ms. Maarit Talvitie (Finland); Ms. Tuuli Tulonen (Finland); Mr. Bert van Munster (Netherlands); and Mr. Wolfram Willand (Germany). The Meeting of the Parties and the Conference of the Parties expressed their appreciation to the Joint Expert Group and the Expert Group on Fire-water Retention for having prepared the safety guidelines and good practices.

[5] More information on these meetings is available at www.unece.org/index.php?id=44842, http://www.unece.org/index.php?id=45437, www.unece.org/index.php?id=45435 and www.unece.org/index.php?id=48199

[6] For more information, see www.unece.org/index.php?id=45431

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