

For our Environment

Umwelt 
Bundesamt

UNECE & OECD Seminar

Industrial Accidents Linked To Climate-Related Natural Hazards and Disasters (Natechs)

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Natechs = Natural Hazard Triggered „Chemical“ Accidents

A Natech, is a

1. chemical accident, including spills of oil and oil products,
2. triggered by a natural hazard or natural disaster

(such as extreme temperatures, high winds, floods, storms, earthquakes, or wildfires).

(OECD Guiding Principles on Chemical Accident Prevention, Preparedness and Response)

Natural Hazard or Disaster



„Chemical“ Installation



„Chemical“ Accident

Natural Hazards

Damage of a biogas plant by high snowload



09.12.2012 Hachmühlen, Germany

Natural Disasters

Fire in a LPG storage site due to earthquake



11.03.2011 Chiba City, Japan

Special Character of Natechs and of Natech Risk Management

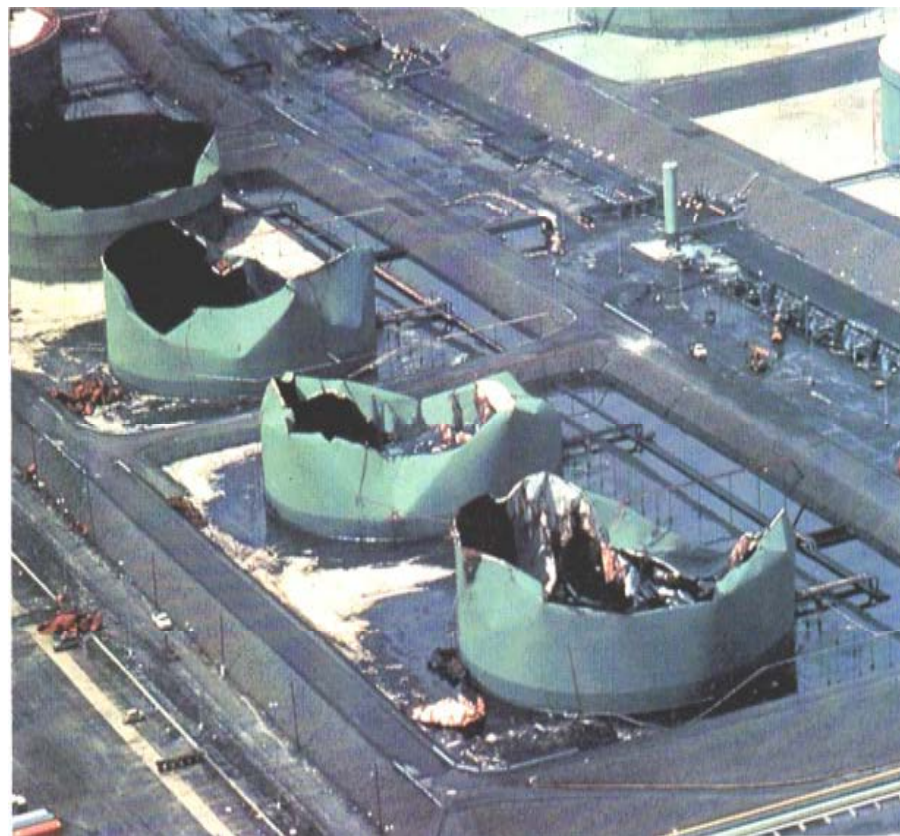
1. **One natural hazard can hit several** (parts of) **installations**
→ several Natechs may happen by the same time
2. **The kind of impact by a natural hazard may be different** from those of technical failures → additional risk analysis, other safety measures required, different or „larger“ accidents may be possible
3. **Aims of applied standards and codes** on the limitation of the impact of natural hazards **may not include the aim to prevent major accidents**
4. **Mitigation measures may not be possible** during and after the impact of a natural hazard or natural disaster
5. **Natechs may increase** the consequences of natural disasters
6. „Chemical“ accidents **within a natural disaster** are **less reported** (regarded)
7. Several Natech risks are **low probability + high consequence** risks
8. Natech Risk Management **requires a multi-disciplinary approach** including competences usually not available in organisations in charge for safety of hazardous installations.

Special Character of Natechs and of Natech Risk Management



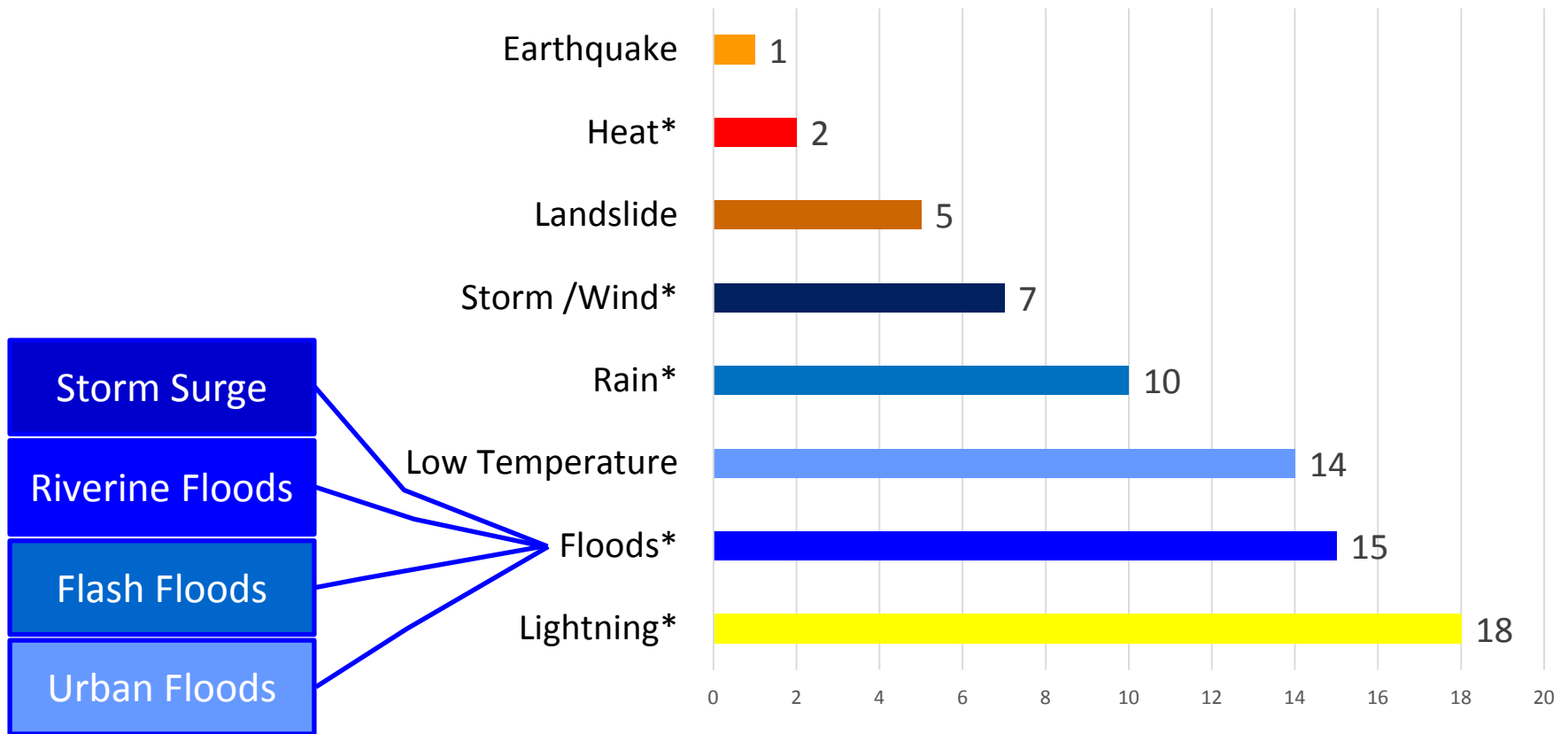
Damage by a Fujita 3 Tornado

Damage due to wind-induced oscillations



Causes of Natechs according to the OECD- and EU-Survey (by the EU JRC):

Causes of Natechs in the EU by 2010

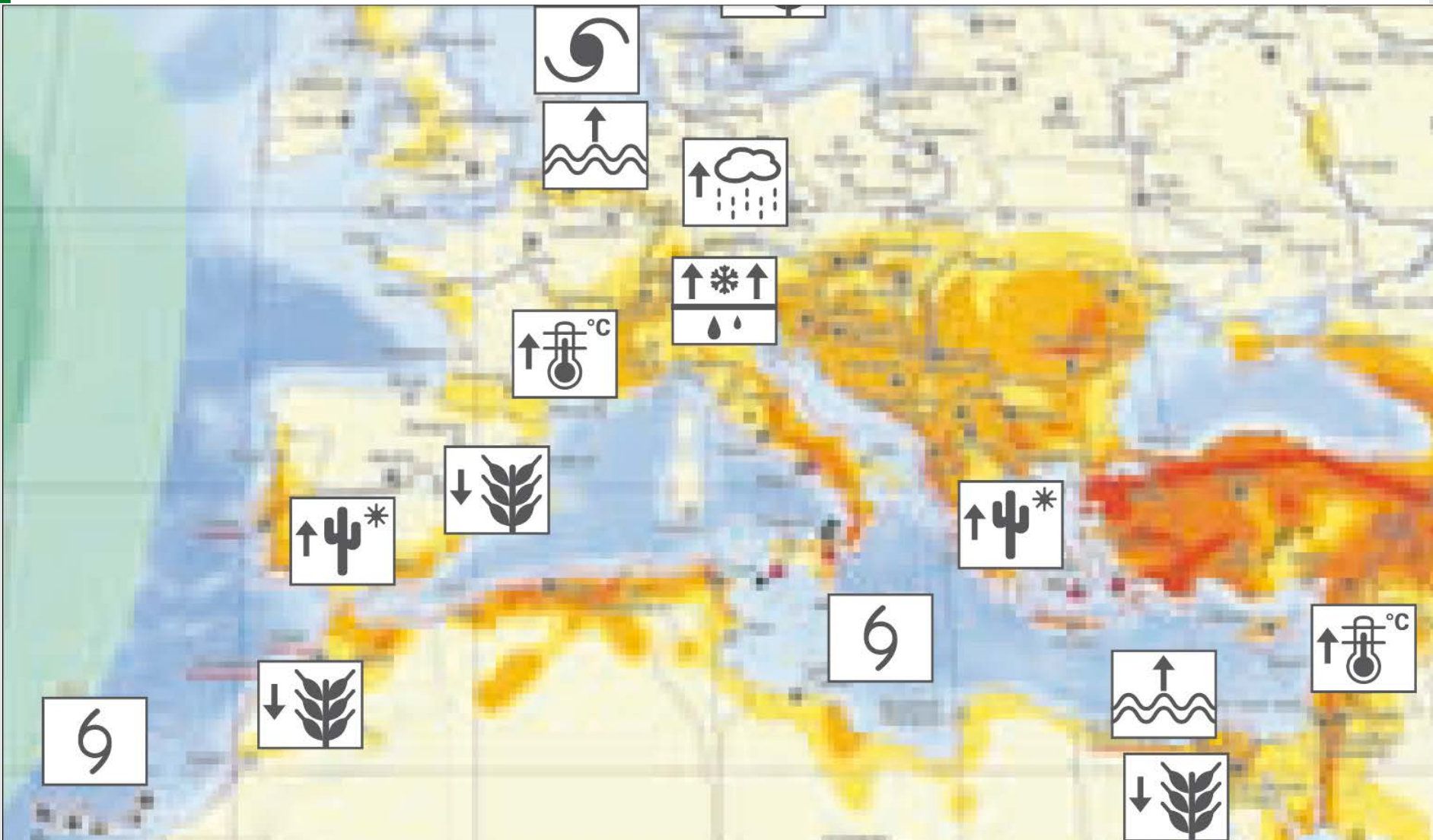


* Influence by Climate Change?

Krausmann, E. et al.: Analysis of Natech risk reduction in EU, EU JRC 2010

Causes of Natechs and Climate Change:

© 2011
Münchener Rückversicherungs-Gesellschaft
Königinstraße 107, 80802 München



The OECD Natech Project (Part I 2009 - 2015) of the OECD WGCA

Aims:

- i. **investigate the specific elements** of prevention, preparedness for and response to Natechs; and
- ii. **make recommendations for good practices** with respect to prevention of, preparedness for and response to Natechs.

Approach:

1. **Survey** on Natechs and Natech Risk Management (done by the EU JRC*)
2. **Steering group** Czech Republic, France, Germany, Italy, Korea, Switzerland, Turkey, the United Kingdom, United States, the European Commission, UNECE, UNEP and the OECD
3. **Workshop** May 2012, in Dresden (Discussion Document, Presentations, Conclusions, Recommendations)

Results:

Reports of the OECD / EU Survey on Natechs

*Krausmann et al.: Natech Risk Reduction in EU Member States, 2010

Workshop Report

OECD [ENV/JM/MONO(2013)4].

Addendum to the OECD Guiding Principles on Natech Risk Management

OECD [ENV/JM/MONO(2015)1

The OECD Natech Addendum : Main Recommendations, Natech Section 18

a. Hazard Mapping

18.a.1 Public **authorities** should ... develop **natural hazard maps**.

b. Risk Assessment

18.b.1 When **undertaking risk assessments** ... , **management** should take account of **Natech risks**.

18.b.3. **Management** should be aware, and take account, of the fact that **climate change may increase natural hazards**.

c. Risk Management

18.c.1 **Management** should take into account **natural hazards in the design** and construction of hazardous installations.

d. Siting and Land-Use Planning

18.d.1 **Management** should perform a **Natech risk analysis before siting** a new installation.

18.d.2 When establishing **land-use planning arrangements** ... **public authorities** should take into account **natural hazards**

The OECD Natech Addendum : Main Recommendations

e. Regulations

18.e.1 In developing and **reviewing regulations and guidance** concerning chemical accident prevention, preparedness and response, public authorities should take **into account risks** associated with **Natechs**.

f. Preparedness and Response

18.f.1 Existing **emergency plans** should be **reviewed** to be sure they address the possible consequences of earthquakes, floods, extreme temperatures and other natural hazards that might trigger Natechs.

18.f.2 **Natural hazard warning systems** should be regularly tested, maintained, and updated.

g. Transboundary Co-Operation

18.g.1 **Neighbouring countries** should **cooperate in Natech** prevention, preparedness and response

h. Polluter Pays Principle

18.h.1 Countries should consider how to **apply the Polluter Pays Principle** in the context of **chemical accidents triggered**, or made worse, **by natural hazards**.

Natechs and the Sendai Framework

15. The Sendai Framework will apply to the risk of ...

- **disasters caused by natural or man-made hazards**, as well as related environmental, technological ... hazards and risks.
- It aims to guide the **multi-hazard management of disaster risks**

“disasters caused by natural or
(and) man-made hazards” ⊃ Natechs

“management of disaster risks” ⊃ Natech Risk Management

Future Work: The UN Joint Environmental Unit / OECD Natech Project Part II

Steering Group of: Joint OCHA/UNEP Environment Unit, UNEP, UNECE, Czech Republic, EEB, EU, Germany, Japan, France, Netherlands, Switzerland, United Kingdom, OECD WGCA Secretariat

Aims:

- 1) to support the implementation of the recommendations** from the first Natech project resulting in the Natech addendum,
- 2) to identify and disseminate examples of good practices** on Natech risk management,
- 3) to make** authorities and other key stakeholders **aware of how advanced Natech risk management can contribute to**
 - the objectives of **the Sendai Framework** on disaster risk reduction and
 - **the Sustainable Development Goals.**

2017 Survey & Interim Report

2018 Workshop

2019 Conclusions and Recommendations

Thank You For Your Attention

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Content:

1 NATECHS

- 1.1 Natechs by Natural Hazards / Natural Disasters, OECD Definition
- 1.2 Character of Natech Risks
- 1.3 Causes of Natechs in the EU (by 2010)
- 1.4 Possible Effects of Climate Change

2 OECD ACTIVITIES

- 2.1 OECD-Natech I Project
- 2.2 OECD Natech Addendum to the Guiding Principles

3 SENDAI FRAMEWORK

Natechs and the Sendai Framework

4. OECD Future Work.

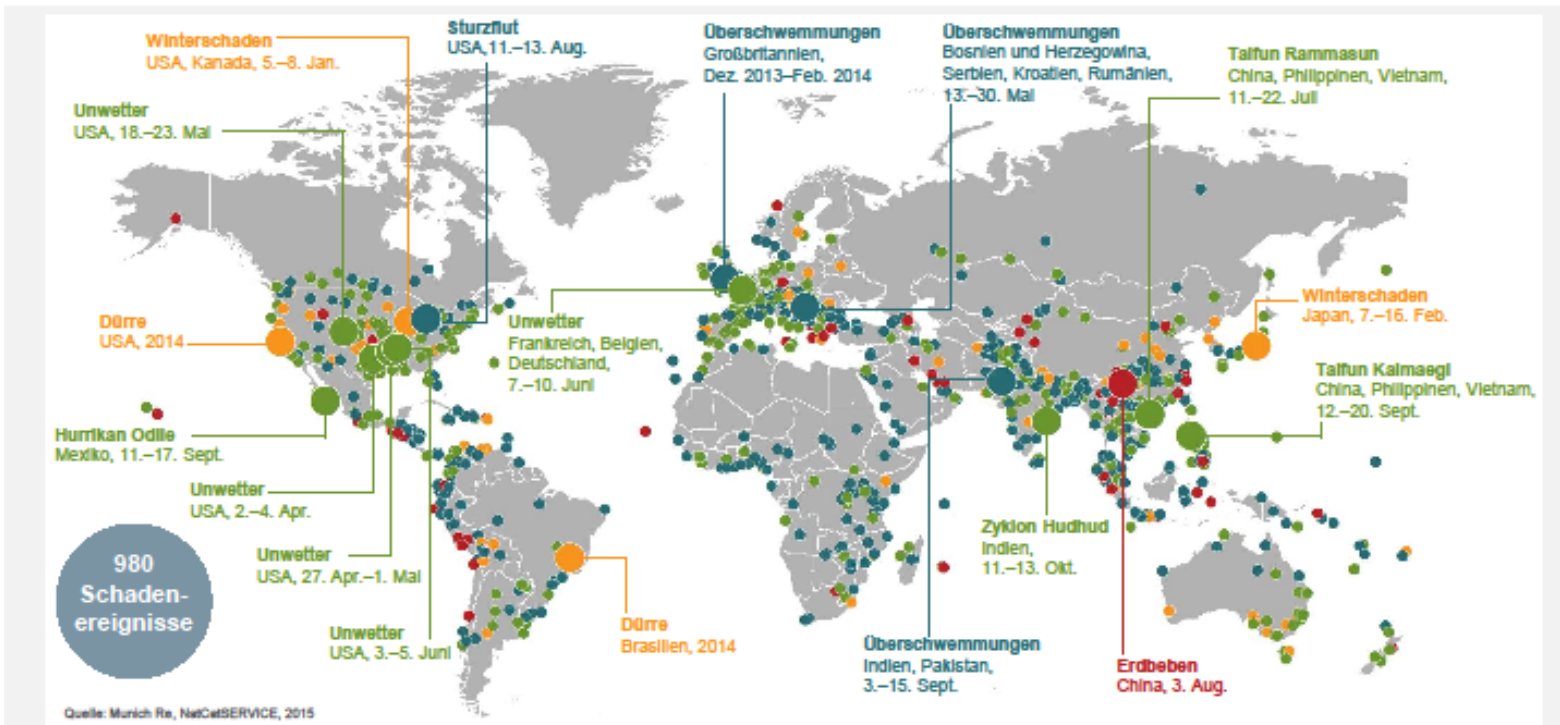
OECD Natech II Project

Causes of Natechs and Climate Change:

NatCatSERVICE



Damage by events 2014



▫ Events with damage

○ Damage
>US\$ 1,500 Mill.

● Geophysical event

■ Meteorological event
Konvektiver Sturm, lokaler Sturm

● Hydrological event

● Climatological event

Natechs and the Sendai Framework

Sendai Framework IV. Priorities for action	OECD Guiding Principles on Chemical Accident Prevention, Preparedness and Response, i.a.
Priority 1: Understanding disaster risk.	A 2 b Hazard Identification and Risk Assessment
Priority 2: Strengthening disaster risk governance to manage disaster risk.	A 2 a Safety Culture, A 3 a Safety strategy (and OECD Guidance on Corporate Governance)
Priority 3: Investing in disaster risk reduction for resilience.	A 2 c Siting, Design, Construction, d. Operation ... A 3 c Safety Performance Review and Evaluation
Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.	B Preparedness, Mitigation C Response D Follow Up to Incidents

Can

- the OECD Guiding Principles on Chemical Accident Prevention, Preparedness and Response contribute to
- the UNISDR/ UN JEU “Words Into Action” Guide on Technological/Man-Made Hazards in the context of the Sendai Framework?