

## 7.2 Relational Information System for Chemical Accidents Database (RISCAD) (Japan)

OECD GP Activity	UN SF Activity	UN SD Goals / Targets
7. Consideration of Natech risks in risk communication, Natech warning systems	1. Understanding disaster risk	Non-specific targets relevant for Natech Risk Management (3.8, 6.3, 9.4, 11.5, 11.B, 12.4)

Classification according to OECD Guiding Principles, UN Sendai Framework Priorities/Activities, and UN SDGs and Targets

Figure 1: Keyword search form on RISCAD

The screenshot shows the RISCAD search interface. At the top, there's a 'SITEMAP' link and the RISCAD logo. Below the logo, there are navigation buttons: 'Home', 'Case Search' (highlighted), 'Material Search', 'How To Use', and 'Characteristics'. The main search area contains several input fields: 'Date' with 'From' and 'To' sub-fields, 'Country / Pref.' with dropdown menus, 'Search keywords' with a hint 'SPACE = AND Search, Uppercase OR = OR Search', and three rows for 'Human injury' (Fatality, Injury, Toxic) each with a range input. There are also 'select' buttons for 'Activity' and 'Equipment'. At the bottom, there are three checkboxes: 'Has progress flow', 'Has additional info.', and 'Has Pdf'. Finally, there are three buttons: 'Search' (orange), 'Clear' (red), and 'Hide search conditions' (blue).

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Figure 2: List of keyword search results on RISCAD (keyword: earthquake)

Search Accident											
	ID	Date	Country	Pref.	Name	Fatali	Injur	Toxic	Prog	Add.	PDF
1	<a href="#">4490</a>	1995/01/17	Japan	Hyogo	Ammonia gas leakage from the pipe damage caused by the	0	0	0	-	-	-
2	<a href="#">4491</a>	1995/01/17	Japan	Hyogo	Ammonia leakage due to pipe damage refrigeration equipme	0	0	0	-	-	-
3	<a href="#">4492</a>	1995/01/17	Japan	Hyogo	Ammonia leakage due to looseness of the valve flange caus	0	0	0	-	-	-
4	<a href="#">4493</a>	1995/01/17	Japan	Hyogo	Gas leakage from the valve flange caused by the Great Har	0	0	0	-	-	-
5	<a href="#">4497</a>	1995/01/17	Japan	Hyogo	Ammonia gas leakage from the pipe damage of the cold stor	0	0	0	-	-	-
6	<a href="#">4498</a>	1995/01/17	Japan	Hyogo	Ammonia leakage from the valve of refrigeration equipment	0	0	0	-	-	-
7	<a href="#">4499</a>	1995/01/17	Japan	Hyogo	Ammonia gas leakage from a pipe flange due to the Great H	0	0	0	-	-	-
8	<a href="#">4501</a>	1995/01/17	Japan	Hyogo	Nitrogen gas leakage caused by the Great Hanshin Earthqu	0	0	0	-	-	-
9	<a href="#">4503</a>	1995/01/17	Japan	Hyogo	Damage to the part of LPG and liquefied oxygen tank the Gr	0	0	0	-	-	-
10	<a href="#">4504</a>	1995/01/17	Japan	Hyogo	Hydrogen gas leakage from the hydrogen producing facilitie	0	0	0	-	-	-

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**Figure 3: Accident Progress FlowChart form in RISCAD**

PFA, RISCAD, AIST			
<b>Summary</b>	<b>Accident ID, Date, Place</b>		
<b>Background</b>			
<b>Category</b>	<b>Causes</b>	<b>Accident progress flow</b>	<b>Remarks</b>
<b>Process</b>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">1</div> <div style="border: 1px solid black; padding: 2px;">Date Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Event 1 (before accident onset)</div> </div> <div style="margin-bottom: 10px;">↓</div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">2</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Event 2 (before accident onset)</div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px; width: 100px; text-align: center;">Inferred cause 1</div> <div style="margin-right: 5px;">↓</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Event 3 (before accident onset)</div> </div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px; width: 100px; text-align: center;">Inferred cause 2* Inferred cause 3**</div> <div style="margin-right: 5px;">↓</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Event 4 (final event: fire, leak, etc.)</div> </div> <div style="margin-bottom: 10px;">↓</div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">1</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Event 5 (post- onset)</div> </div> <div style="margin-bottom: 10px;">↓</div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">2</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;"></div> </div> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px; width: 100%;">Re : Event 1</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px; width: 100%;">Re : Cause 1</div> <div style="border: 1px solid black; padding: 5px; width: 100%;">*Re : Cause 2 **Re : Cause 3</div>	
<b>Counter-measure</b>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">1</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Event 5 (post- onset)</div> </div> <div style="margin-bottom: 10px;">↓</div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">2</div> <div style="border: 1px solid black; padding: 2px;">Time</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;"></div> </div> </div>		
<b>Permanent Counter-measure</b>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">1</div> <div style="border: 1px solid black; padding: 2px;">Keywords</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Permanent measure 1</div> </div> <div style="margin-bottom: 5px;">↓</div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">2</div> <div style="border: 1px solid black; padding: 2px;">Keywords</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Permanent measure 2</div> </div> <div style="margin-bottom: 5px;">↓</div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">3</div> <div style="border: 1px solid black; padding: 2px;">Keywords</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">Permanent measure 3</div> </div> </div>		
<b>Lessons Learned</b>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Lesson phrase 1: Description</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Lesson phrase 2: Description</div> <div style="border: 1px solid black; padding: 5px;">Lesson phrase 3: Description</div>		

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Short Facts:	Natural Hazard(s) Considered:
<b>Governance approach:</b> Risk communication <b>Source:</b> National Institute of Advanced Industrial Science and Technology (AIST) and Japan Science and Technology Agency (JST) <b>Entry into force:</b> 2002 <b>Targeted Stakeholders:</b> Chemical industry <b>Scope of applicability:</b> National	<ul style="list-style-type: none"> <li>• Earthquake</li> <li>• Flood</li> <li>• Typhoon</li> <li>• Tsunami</li> </ul> <b>Climate change:</b> Not considered

## Description

### Relational Information System for Chemical Accidents Database (RISCAD)

The Relational Information System for Chemical Accidents Database (RISCAD) was developed by the Japan Science and Technology Agency (JST) and the National Institute of Advanced Industrial Science and Technology (AIST). It uses data retrieved after explosions, fires, and leakage accidents related to chemical substances, chemical processes, high-pressure gas, and explosives.

An accident-case database was developed by the AIST, specializing in chemical accidents. With support from the database development program of the JST (launched as RISCAD in October 2002), the project ran for three years, starting in 2009.

### Progress Flow Analysis (PFA)

Some of the accident data in RISCAD are linked to the 'Accident Progress FlowChart'. This shows the cause analysis and timeline of each accident and is created by conducting an accident analysis called 'Progress Flow Analysis' (PFA). PFA also helps to build up safety awareness in businesses.

## Link/Contact:

<https://riscad.aist-riss.jp/?lang=en>

<https://riscad.aist-riss.jp/acc>

Email: [riscad-ml@aist.go.jp](mailto:riscad-ml@aist.go.jp)

## Comments by the UN/OECD Natech-Steering Group:



Communication of lessons learnt should include also those from Natech accidents. This may be true for several databases, but not for all Natechs as some of them may not be in the scope of the underlying reporting system.

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