

**Fusion Reality into Myth: Calibrating  
Scientific Paradigms for Risk  
Assessment by Knowledge from Past  
Asian EQ**

Dr. Efraim Laor, University of Haifa, Israel  
laor10@zahav.net.il

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Israel, +972-4-6709944

**Hazard Analysis,  
Vulnerability Mapping and,  
Risk Assessment**

Dr. Efraim Laor, University of Haifa, Israel  
laor10@zahav.net.il

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Israel, +972-4-6709944

**Conclusion**

- **NATECH's, Replace Pure Disaster Agents Triggers.**
- **Referring To Compound Hazard Analysis Rather than Limit to Container Specifics.**
- **Drastically Augment Response Operational Capabilities By the Establishment of New Responsibility Lines Between Regime - Citizens**

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**Do Currently Used Scientific Paradigms for Risk Assessment  
enfold an operational worth?**

**Do Currently Used Hazard Analysis Methods, yield Real  
Vulnerability Mapping?**

**NO!**

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“Natural Disaster Hotspots: A Global Risk Analysis”  
[March 31 2005 NY]—The World Bank

- **3.4 billion people**, more than half the world’s population, live in areas where at least one hazard could significantly impact them.
- In 35 countries, more than 1 in 20 residents lives at relatively high mortality risk from 3 or more hazards;

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No more “Pure” Natural Disaster, e.g.,  
Earthquakes, Floods, Volcanoes, Cyclones,  
**but:**

**NATECH disasters:**  
**when natural hazards trigger**  
**technological disasters**

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### **Strong quake shuts down nuclear reactor**

- Posted: 04 November 2004 13:18 hrs

TOKYO : A strong earthquake shook the region of central Japan hit by a tremor last month, shutting down a nuclear reactor .

The area was hit by a 6.8 magnitude quake on October 23 ...

**Tokyo Electric Power said a reactor at the Kashiwazaki-Kariwa nuclear power plant automatically shut down .**

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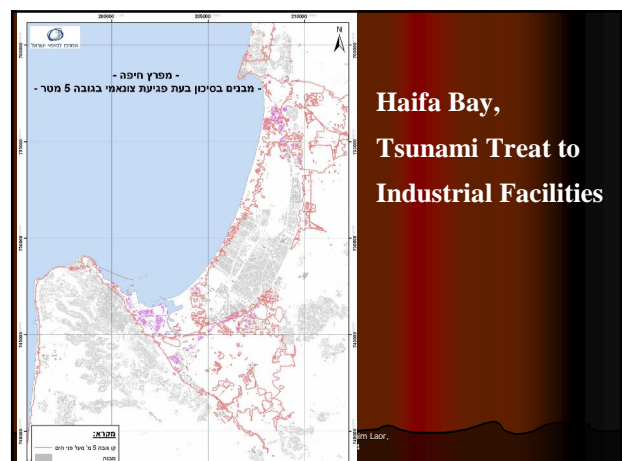
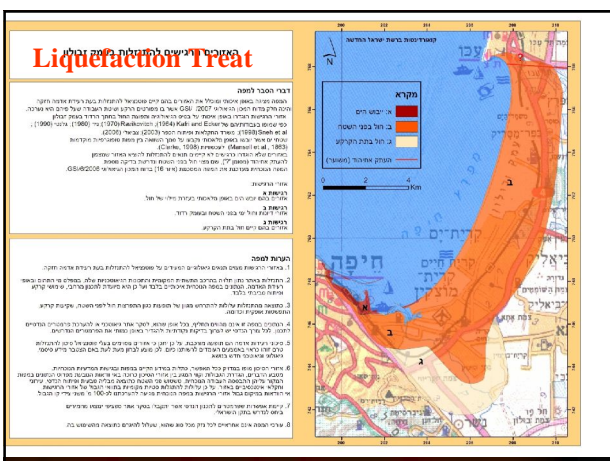
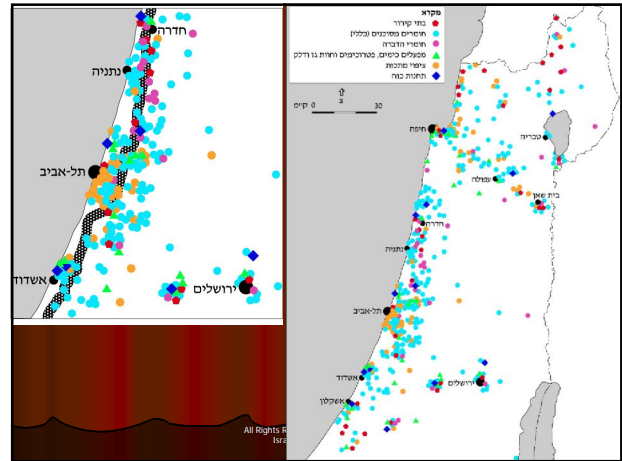
More than 90 percent of the populations of  
Bangladesh, Nepal, the Dominican Republic,  
Burundi, Haiti, Taiwan, Malawi, El Salvador, and  
Honduras live in areas at high relative risk of death  
from two or more hazards.

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**No. Of Deceased, Injured Due To Release Of 2,400**

**אירועי 12,500 מושפעים מרדיואקטיביות**

השק	לק	המקרה
600	300	ד"מ ERPG3
15,000	20,000	מ"מ ERPG2
1,500	5,000	מ"מ ERPG1
50	200	מ"מ ERPG0
17,150	25,500	היס"כ



Do Currently Used Hazard Analysis, based on the premise of strict Building Codes yield Real Vulnerability Mapping?

**NO!**

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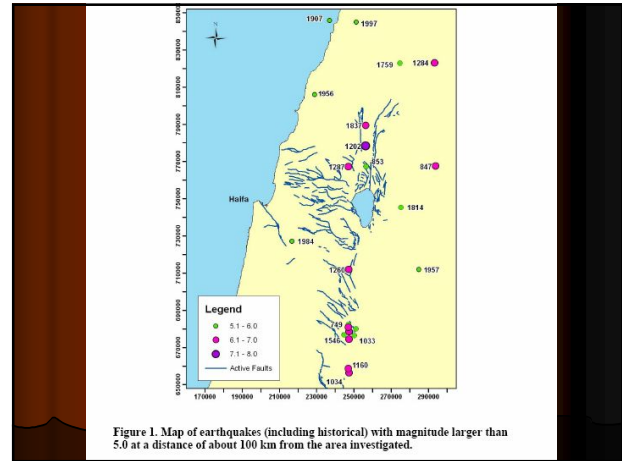


Figure 1. Map of earthquakes (including historical) with magnitude larger than 5.0 at a distance of about 100 km from the area investigated.

**A Matter of Choice**  
Microzonation is unmanageable....  
the other elements can be controlled.

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EQ consequences are dominated by four key elements:

- Microzonation
- Strict building-craft based on appropriate building-codes
- Dispersal of people at the moment of EQ-onset;  
their response within seconds, minutes, hours
- Establishment's action or inaction

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### Even Worse Than Worst-Case

- Under U.S. Environmental Protection Agency rules, a facility's worst-case scenario is limited to the single largest container of the most dangerous chemical onsite.

For example, General Chemical Corp. in Newark lists the release of **211,000 pounds** of Oleum, fuming sulfuric acid, as its worst-case scenario.

But the total inventory of Oleum is listed at **5,000,000 pounds**, and the plant also houses 125,000 pounds of nitric acid.

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### Comparison of design requirements US vs. Japan

Design codes/standards	United States	Japan
- Seismic risk	<ul style="list-style-type: none"> <li>No federal requirement</li> <li>475-yr EQ, up to 2475-yr EQ</li> <li>Land use restrictions in near-fault zones in California</li> <li>Law triggered by modification or construction of new plants</li> </ul>	<ul style="list-style-type: none"> <li>Nationally regulated</li> <li>0.3 g (50 -100-yr EQ), up to 0.6 g (800-1000-yr EQ) standards</li> <li>Stricter regulations for To-Nankai/Nankai region</li> <li>Law triggered by modification or construction of new plants</li> </ul>
- Flood risk	<ul style="list-style-type: none"> <li>No federal requirement</li> <li>Generally outside 100-yr floodplain</li> <li>Law triggered by modification or construction of new plants</li> </ul>	<ul style="list-style-type: none"> <li>Generally outside 100-yr floodplain</li> <li>Law triggered by modification or construction of new plants</li> </ul>
- High winds	<ul style="list-style-type: none"> <li>No federal regulation</li> <li>Design to withstand the 50-yr event plus importance factor (equivalent to 500-yr event)</li> <li>Some land use restrictions in coastal zones</li> </ul>	<ul style="list-style-type: none"> <li>Nationally regulated</li> <li>Wind loads are performance based</li> <li>Generally designed to withstand the 100-500-yr event</li> <li>Land use restrictions</li> </ul>

We Should Cast Aside the Concept that a facility's worst-case scenario is limited to the single largest container of the most dangerous chemical onsite,

**but,**

**Adopt Hazard Analysis which refers to the total inventory of Hazardous Materials, Stored at a Compound, Irrespective the owner of each one of the Containers**

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The rules for determining the single worst-case scenario **do not** take into account the possibility that **terrorists** could cause a breach of multiple containers.

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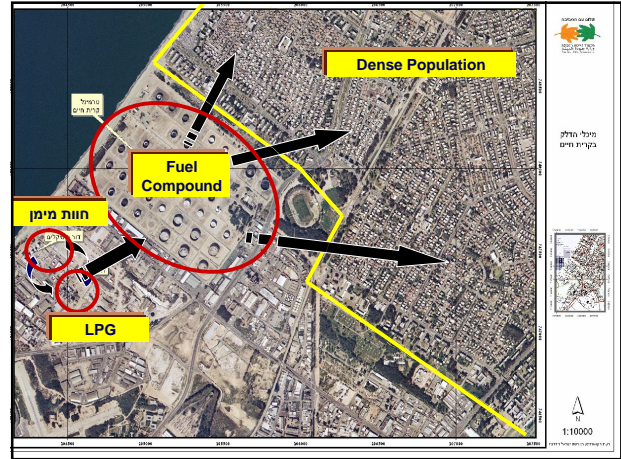
## Operational Capacity

In contrast to ever-ready operational capacity which corresponds to Daily emergencies,

there is an unbridgeable gap between **standing**-ops-capabilities and what is essential to be done to save lives and reduce damage to peoples' health.

The Israeli case:

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## Sharing Responsibility Regime - Citizens

Emergency Cycle	Leading Role
Prevention	Government + Ranks & Files <small>[parity]</small>
Preparedness & Mitigation	<b>Government</b> + Ranks & Files
Response	<b>Ranks &amp; Files</b> + Government <small>Decisive Secondary</small>
Rehabilitation	Ranks & Files + Government
Reconstruction, Recovery	<b>Government</b> + Ranks & Files

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## Reference Scenario EQ, Israel – Victims & Damage Estimation

Category of Damage	No.	Current Ops Response	Type of Service
Dead	<b>16,000</b>	50 p/D	D.V.I
Injured	<b>90,000</b>	Tens of K's	To Hospitals
Trapped	<b>36,000</b>	Several K's	US&R
IDP's	<b>400,000</b>	Several K's	Shelter + Relief
Collapsed Buildings	<b>10,000</b>	Dozens	
Major Damage	<b>20,000</b>	Hundreds	
Retrofitable Damage	<b>104,000</b>		

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כל אחד שיעסוק במקצועו ובכלים המתאימים לכך



## Conclusion

- NATECH's, Replacing Pure Disaster Agents Triggers.
- Referring To Compound Hazard Analysis Rather Container Specific.
- Drastically Augment Response Operational Capabilities By the Establishment of a Exclusive New Responsibility Lines Between Regime - Citizens

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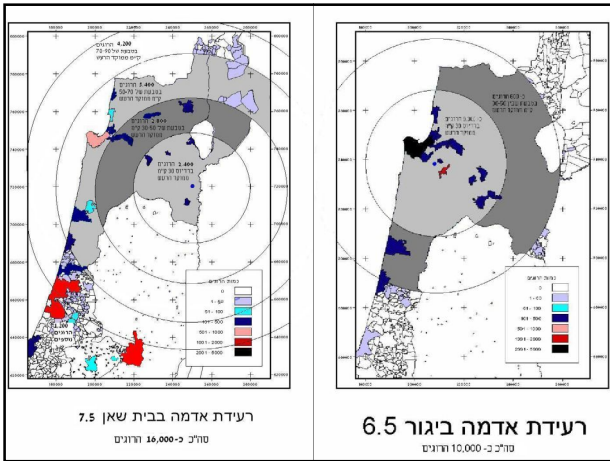
הבחירה שלנו – רק שלנו



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שריפות בגין ר-א, קובה, יפן –  
מעל 144 שריפות ענק בו-זמנית





US Nuclear Society's Calculated Consequences of Nuclear Plant Accidents

10 Acute Fatalities	Once in 30,000 Years
1000 Acute Fatalities	Once in 1,000,000 Years
10 Acute Illnesses	Once in 1,600 Years
1000 Acute Illnesses	Once in 30,000 Years
10 Latent Cancers	Once in 500 Years
1000 Latent Cancers	Once in 1,400,000 Years
10 Genetic Effects	Once in 600 Years
1000 Genetic Effects	Less than once in 10,000,000 years
10 Thyroid Illnesses	Once in 700 Years
1000 Thyroid Illnesses	Once in 5,000 Years
\$1,000,000 Property Damage	Once in 200 Years
\$100,000,000 Property Damage	Once in 600 Years
\$300,000,000 Property Damage	Once in 5,200 Years

טרור 9/11 ארה"ב - אינפורמציה קלינית

17/5	31/1	22/1	17/1	1/10	26/9	18/9	16/9	15/9	14/9	קורבנות
19,497	12,256	9,767	7,468	4,735	276	152	108	94	266+40	שרידי גופות
1,058	595	446	307	214	206	92	58			חללים מזוהים
			4,569		6,453	4,972	4,763	4,763	265 כבאים	נעדרים
		9,528	7,886	5,735	5,124	3,201	3,201	3,800	- 1,500 2,000	פצועי גוף
		6,116	4,908							פגועי נפש
					415	164	164			מאושפזים
	936	936	893			170				בעלי חיים

