



Supplementary Information

Oral presentation

Presentation from Alexander Belyakov

In the Matter of

Ontario Power Generation Inc.

Application to renew the Power
Reactor Operating licence for the
Darlington Nuclear Generating Station

Commission Public Hearing
Part 2

November 2-5, 2015

Renseignements supplémentaires

Exposé oral

Présentation de Alexander Belyakov

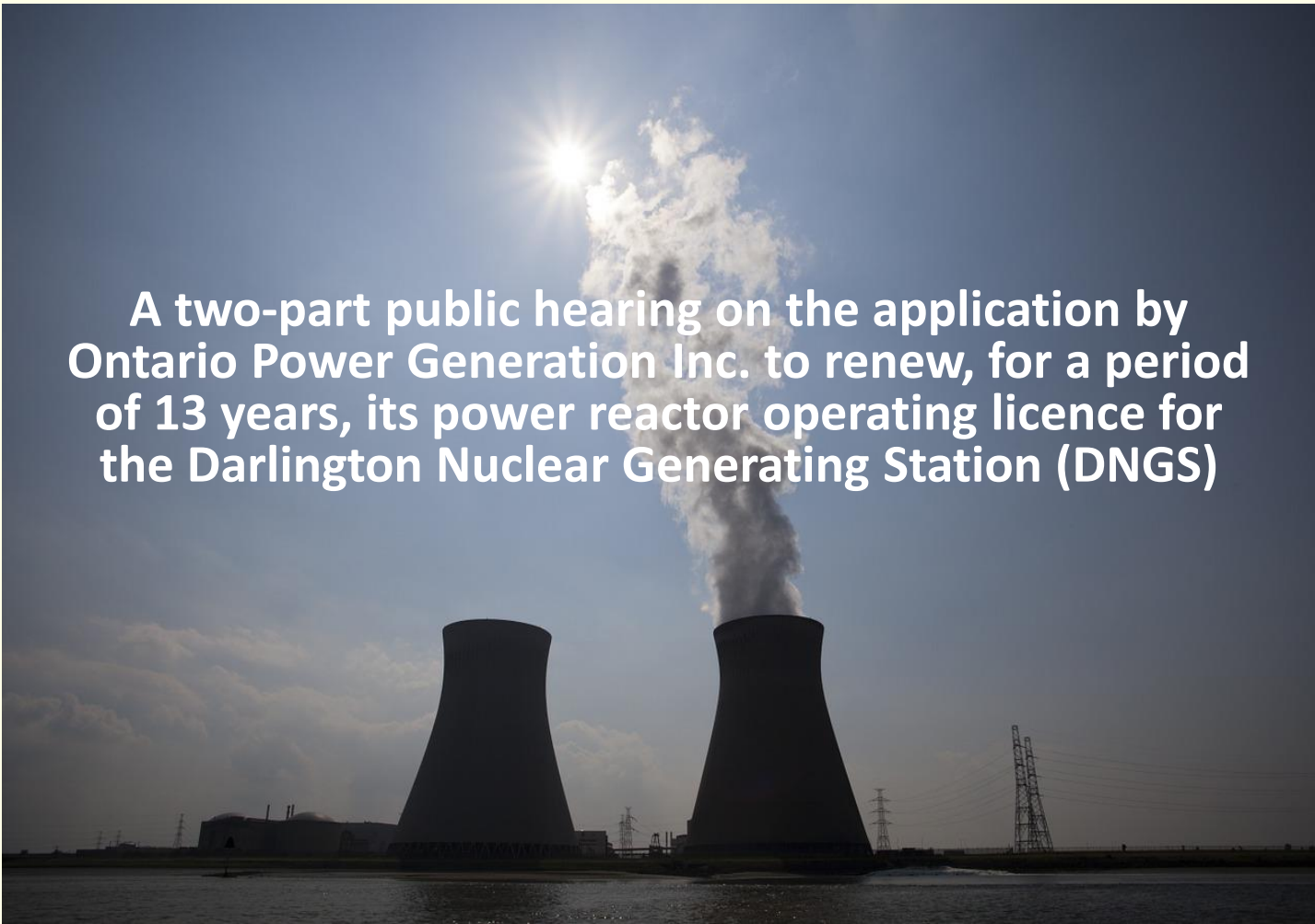
À l'égard de

Ontario Power Generation Inc.

Demande concernant le renouvellement
du permis d'exploitation pour la centrale
nucléaire de Darlington

Audience publique de la Commission
Partie 2

2-5 novembre 2015



A two-part public hearing on the application by Ontario Power Generation Inc. to renew, for a period of 13 years, its power reactor operating licence for the Darlington Nuclear Generating Station (DNGS)

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Why Do I Research Nuclear Safety?

My personal experience:

- Various visits to the affected areas in Ukraine and Belarus in 1992-2011.
- Member of the International Chernobyl Research and Information Network (UNDP, IAEA, UNICEF, WHO).
- Journalist for the Ukrainian national newspaper "Robitnycha Gazeta", Kyiv, Ukraine, 1993-1997, and the newspaper "Echo Chernobylja" (Echo of Chernobyl), Kyiv, Ukraine, 1992-1993.
- Member, Board of Advisors, Chernobyl Foundation, Toronto, Canada, 2011-2015.
- UC Berkeley Workshop Facilitator on Nuclear Safety, 2015.
- Research on risk communication & food security



Food Insecurity Issues

My focus is on the **Secondary Zone (within a 50 km radius of DNGS)** within which it is necessary to plan and prepare measures against **exposure from the ingestion of radioactive material**.

Both the Soviet and Japanese governments failed to adequately protect citizens' rights to safe, adequate food **in the affected zones up to 80 km and beyond**.

Food contamination **significantly** contributed **to internal radiation doses**.

Do we have **a detailed plan** on how to prevent the contamination of foodstuffs, protect the public from ingestion of contaminated products and **ensure catering for large numbers of diverse evacuees from all communities?**

Evacuees from the GTA also might have a high risk of becoming malnourished.

From Chernobyl to Fukushima: an interdisciplinary framework for managing and communicating food security risks after nuclear plant accidents

Alexander Belyakov

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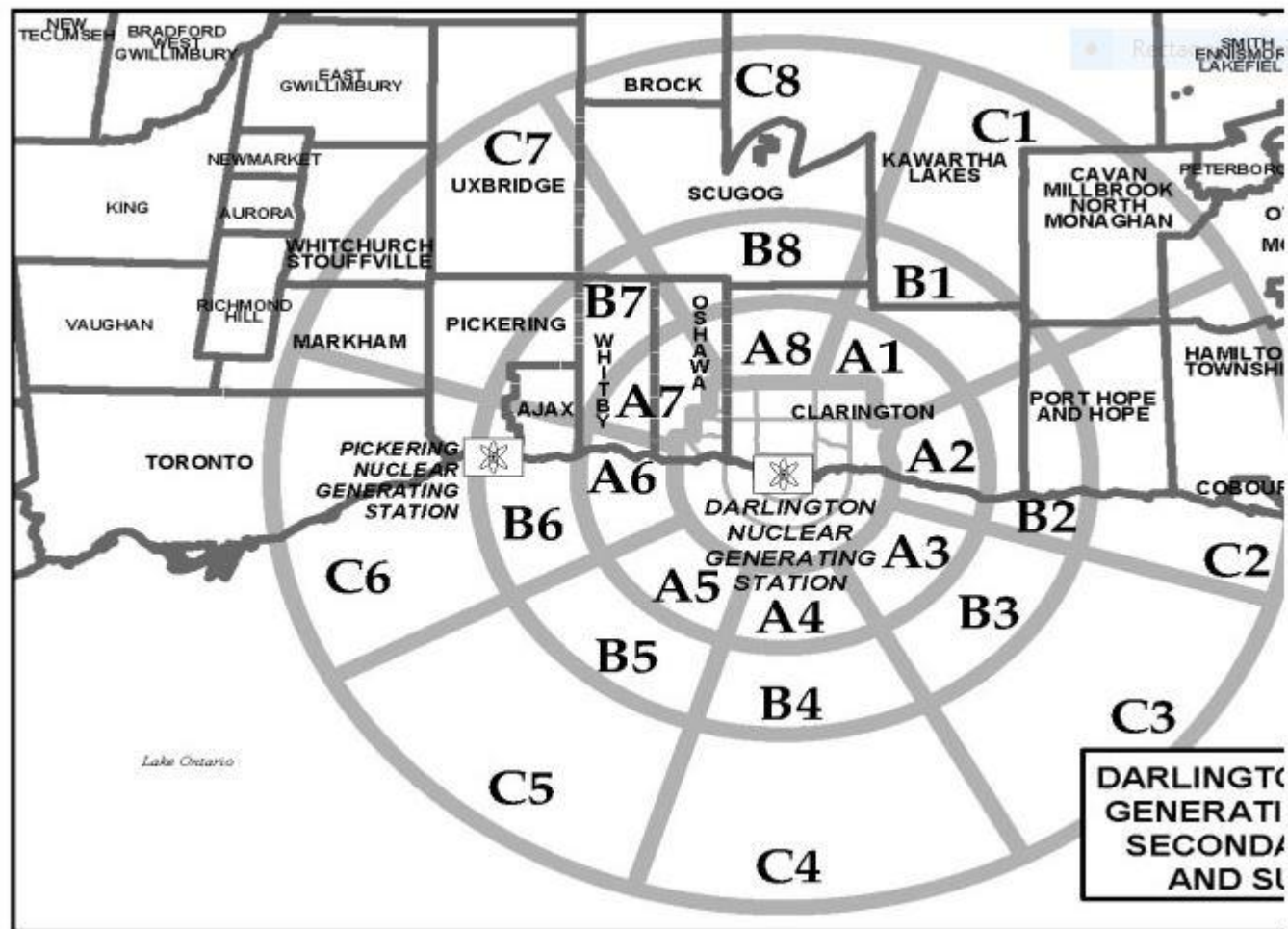
J Environ Stud Sci (2015) 5:404–417
DOI 10.1007/s13412-015-0284-2



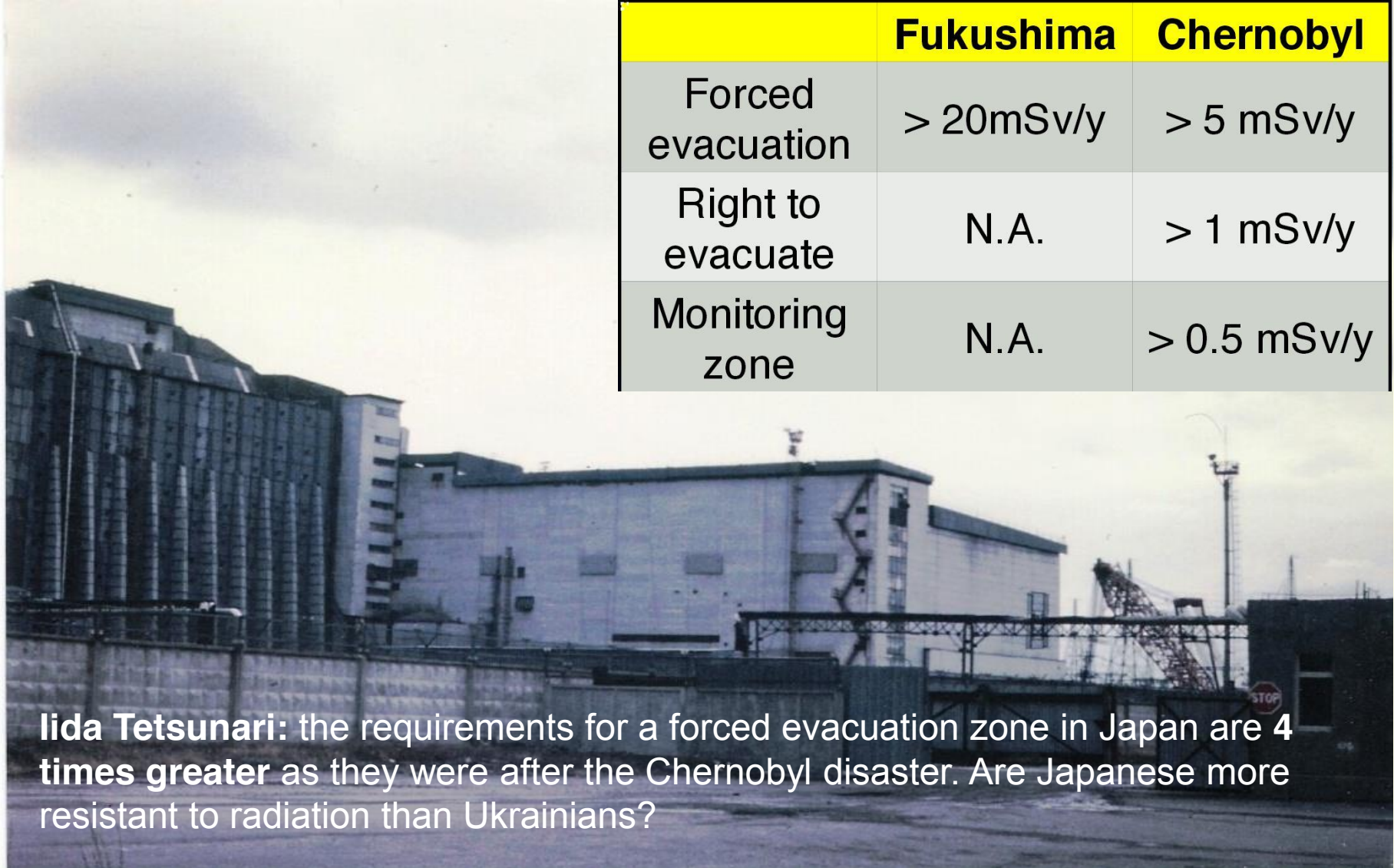
<http://fromchernobyltofukushima.com>

Emergency Zoning Issues

Provincial Nuclear Emergency Response Plan Implementing Plan For DNGS



Chernobyl vs. Fukushima Disaster

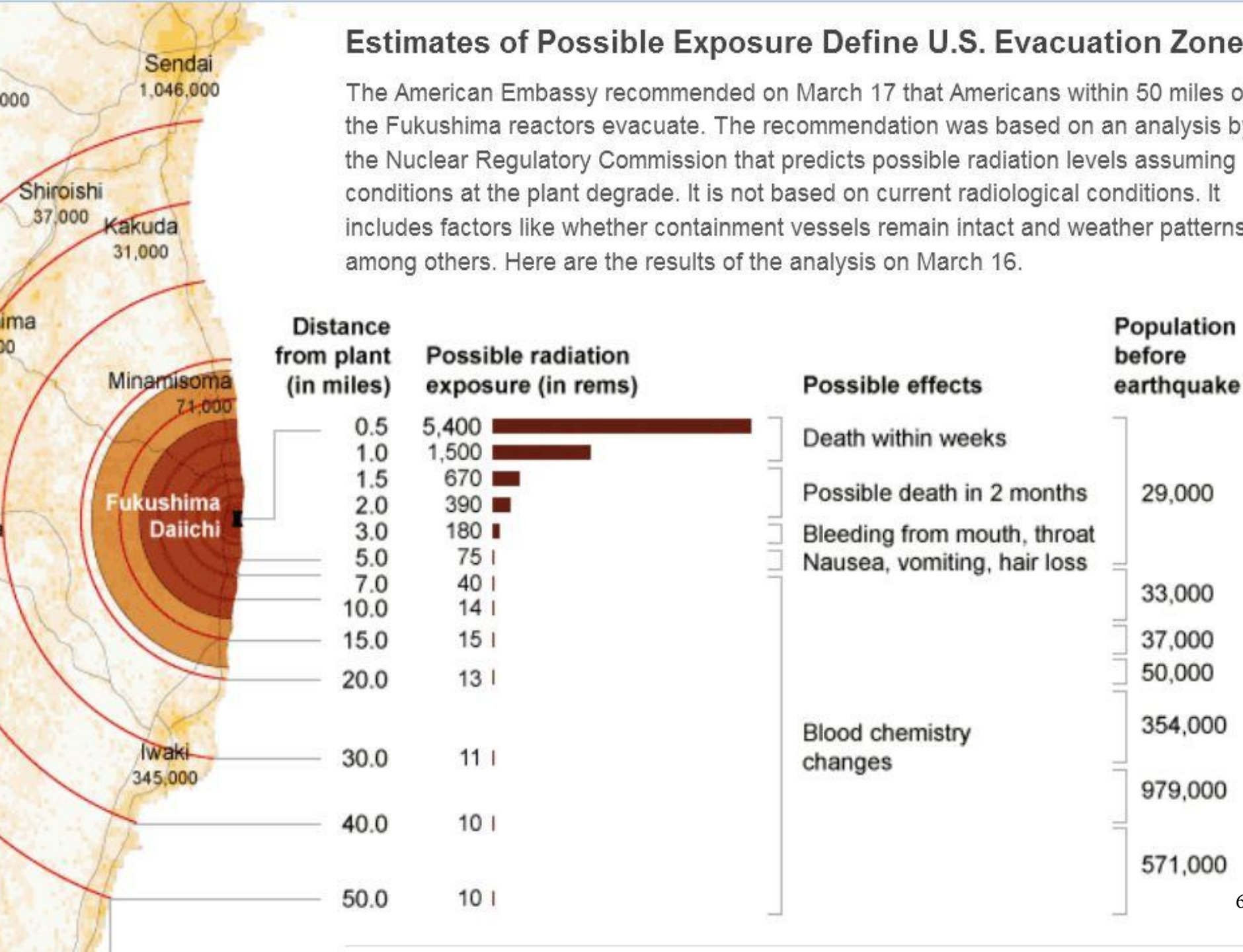


	Fukushima	Chernobyl
Forced evacuation	$> 20\text{mSv/y}$	$> 5\text{ mSv/y}$
Right to evacuate	N.A.	$> 1\text{ mSv/y}$
Monitoring zone	N.A.	$> 0.5\text{ mSv/y}$

Iida Tetsunari: the requirements for a forced evacuation zone in Japan are **4 times greater** as they were after the Chernobyl disaster. Are Japanese more resistant to radiation than Ukrainians?

Estimates of Possible Exposure Define U.S. Evacuation Zone

The American Embassy recommended on March 17 that Americans within 50 miles of the Fukushima reactors evacuate. The recommendation was based on an analysis by the Nuclear Regulatory Commission that predicts possible radiation levels assuming conditions at the plant degrade. It is not based on current radiological conditions. It includes factors like whether containment vessels remain intact and weather patterns, among others. Here are the results of the analysis on March 16.



Evacuation

The Soviet authorities established the 30 km zone of mandatory resettlement after the Chernobyl disaster.



http://timer-odessa.net/intervyu/pripyat_1986_vakuatsiya_vospominaniya_och_evidtsa_909.html

Chaos and panic during the disaster

The evacuation of the entire City of Toronto under hypothetical large-scale emergencies

The number of people in Toronto peaks at 108% of the City's population (2.56 M residents at 4:00 a.m.). They need 1,216,886 evacuation trips by car and 1,344,942 evacuation trips by transit (Abdelgawad & Abdulhai 2010), which **could result in an unmanageable situation** in the event of an emergency.

What will be the average response time of a 911 call during a nuclear emergency?

Rescue of 1,400 passengers from waterlogged commuter GO train took 7 ½ hours in 2013.

What We Don't Know

- The licensee's emergency preparedness is formally and regularly evaluated by the regulator, whereas there is **no such formal and independent approach to evaluate the preparedness of offsite authorities.**
- Do you know **how lack of emergency preparedness may affect population in the Greater Toronto Area?**
- “As we know, there are **known knowns**; there are things we know we know. We also know there are **known unknowns**; that is to say we know there are some things we do not know. But there are also **unknown unknowns**—the ones we don't know we don't know” (Donald Rumsfeld).

Conclusions

- **No evidence** that emergency plans are adequate for the life extension period. **Updated evacuation modelling** is needed for an INES level 7 accident.
- Examine the lessons learned from the Chernobyl and Fukushima disasters (including lack of ingestion control).
- **Local communities** might need more guidance and interdisciplinary approach in **emergency preparedness** (especially, ingestion control and food security issues).
- **Avoid unreasonable risks** for health, food, and environment in case of nuclear emergency.
- **OPG's operating license should be limited to a one year.** No life extension should be permitted without the full disclosure of all potential risks.