

福島原発事故のコミュニケーション

日本と英国の例から考える

22.10.2013 @ Japan Atomic Industrial Forum
Shigeyuki Koide



お話しのポイント

- 東京電力・福島第一原子力発電所事故
- 情報開示、コミュニケーションの失敗例
- 過酷事故対策を考えなかった失敗が根底
- 市民への適切な説明、メッセージがなかった
- 非科学的な情報、流言が社会に蔓延
- 社会的混乱→政府、原子力界の信頼失墜



福島原発事故の結果

- 放射性物質: 85万 tera Bq (12% of Chernobyl)
- 海洋流出Cs137: 5,600 tera Bq
- 20-30km: 住民退避、居住制限
- 30-50年: 廃炉・解体、放射性廃棄物処理
- **大震災・津波被害 → 18,700 人**
- **一方で、原発事故による犠牲者 → 0**
- **最悪の影響は→ コミュニティの混乱、崩壊**

Shigeyuki Koide



コミュニケーションの失敗！

情報が届かないことが社会の混乱を生む

- 二つの大きな失策
 - 1) 原子力発電所の事故の概要、見通し
→ **メルトダウン、相場観を伝えなかった**
 - 2) 放射性物質の拡散動向
→ **拡散予測システム(SPEEDI)の非公開**
- 結果は、大きな社会的混乱の発生
→ **周辺住民、市民を守る思想の欠如**



情報はなぜ発信されなかったか？

- 首相官邸→ 機能不全、情報収集無力
- 原子力安全委員会→ 伝える意識無し
- 原子力安全保安院(経済産業省)
 - トップの逃走(寺坂信昭・保安院長)
- 東京電力→ 限界、責任逃れ、情報隠し

シビアアクシデント対策、全面的に除外
→ 情報集約法、指揮系統、決定主体・・・



原子力安全委員会、会見は12日後 (23.03.2011)

- Silent for 12 days after the accident
- “It did not seem to be our job”
- “We forgot to communicate toward the public”
- Afraid of causing a public panic

Nuclear commission releases radiation estimates for 1st time

The Yomiuri Shimbun

One-year-old infants might be at risk of radiation exposure exceeding the level that requires precautionary medication, even if they live outside the 30-kilometer-radius evacuation zone from the troubled Fukushima No. 1 nuclear power station, according to a government panel.

The Nuclear Safety Commission on Wednesday night released its first estimates on infants' internal exposure to radioactive iodine in the atmosphere. The estimates were based on a retroactive simulation of the release of radioactive material from the plant since March 12, one day after the massive earthquake.

The NSC's calculations were based on the assumption that 1-year-old infants were outside the entire time from 6 a.m. on March 12 until Wednesday midnight, a period of nearly 12 days.

They estimate the amount of internal radiation 1-year-old infants would have received from radioactive iodine in the air under these conditions. Infants are more susceptible than older children and adults to the effects of radiation.

According to the estimates, infants could have been exposed to radiation of more than 100 millisieverts, even in some areas outside a 30-kilometer radius of the nuclear power plant. People within that radius were instructed by the government to evacuate or stay indoors, depending on their proximity to the plant.

Potassium iodine should be administered to infants who receive exposure of 100 millisieverts as a precautionary measure.

However, a panel official said: “Even if the exposure level tops 100 millisieverts, it won't pose health risks [to infants]. Furthermore, if infants stay inside, the exposure level drops to between one-fourth and one-tenth [of levels outdoors].”

The simulation on which the estimates were based was conducted using a computer system of the Nuclear Safety Technology Center called the System for Prediction of Environmental Emergency Dose Information (SPEEDI).

The system was originally designed to quickly formulate projections of which areas should be evacuated after an accident at a nuclear power plant. However, power blackouts and hardware malfunctions caused by the March 11 earthquake made it impossible for the commission to measure the amounts of radioactive substances discharged into the air from the plant, and therefore unable to provide useful projections about the need for evacuations.

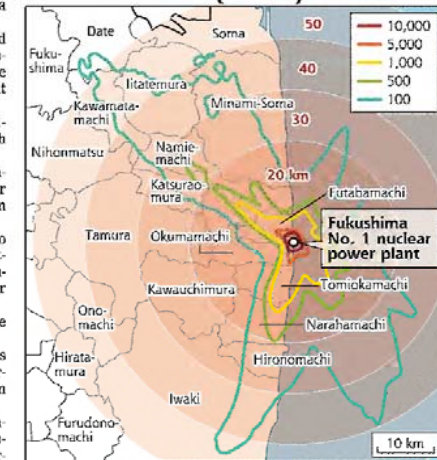
The panel retrospectively calculated the amounts of radioactive iodine discharged, based on surveys of the atmosphere around the power station from Sunday to Tuesday.

Based on the results of the surveys, the panel calculated how far the radioactive material had spread.

The NSC announced the estimates at 9 p.m. Wednesday, after the U.S. Energy Department announced its own estimates at 9 a.m. that day. The data is available at www.energy.gov/japan2011.

The panel has been criticized by experts for not announcing

Estimates of internal exposure to radiation according to the System for Prediction of Environmental Emergency Dose Information (SPEEDI)



(Based on the assumption that a 1-year-old infant was outside for 12 days from March 12 in each area. Unit: millisievert)

other estimates it calculated earlier, without specifying the specific amount of radioactive material discharged from the plant.

SPEEDI was designed to make quick, accurate projections of the proliferation of radioactive substances from a nuclear power plant in the case of an accident.

In developing its projections, the system factors in data such as the climate and geographical surroundings.

The then Science and Technology Agency launched development of the system in the wake of the nuclear accident on Three Mile Island in the United States in 1979.

The SPEEDI system has been revised regularly, with ¥780 million allocated to the project in the 2010 budget.

علاء الدين مطعم



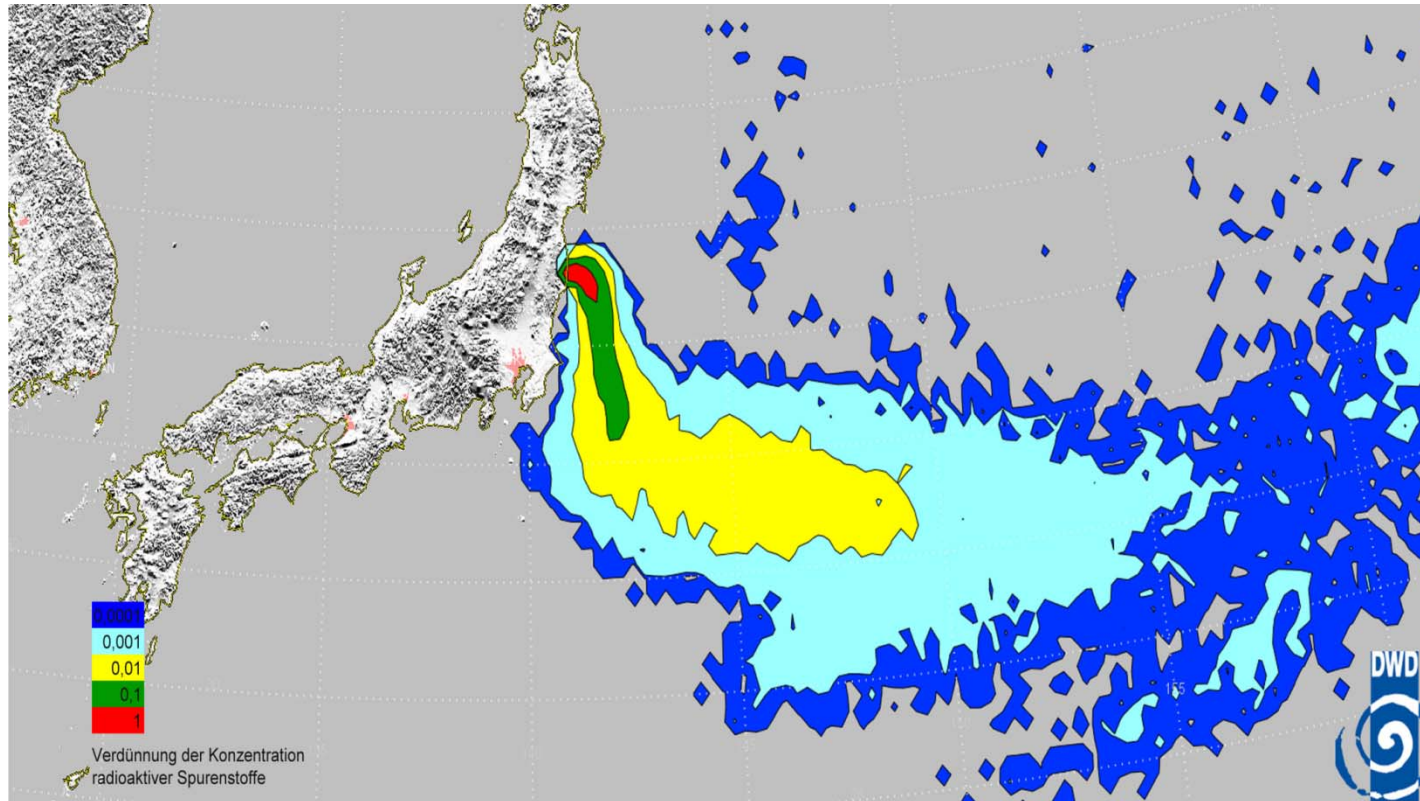
原子力安全保安院長の逃走

- 官邸の危機対策室から離脱(最も重要な数日間)
- “私は文化系出身でワカラナイ……”
- 指揮官として？
- Publicへのメッセージも発信できない
- 適材適所の原則＝**職階制人事**
組織の上に立つ人材の能力、責任感、誇り

Shigeyuki Koide



German Weather Agency Prediction (23.03.2011)



- 国外では放射線拡散のシミュレーションが公表されたが、日本では情報が隠された

Shigeyuki Koide



一般社団法人 日本原子力産業協会 第2回 原子力安全シンポジウム H25年10月22日

情報開示に失敗 信頼の失墜

- 非科学的な言説、ウワサがメディアで拡大
- 不安が広がり、国際的な放射線安全基準を遙かに下回る、「ゼロ・リスク」志向へ
- 科学的に根拠のない判断、基準変更を繰り返した。「安全より安心」(厚労大臣)

>>> 原子力界、政府の信頼失墜

>>> Scientific community 全体への不信感

→ 科学にだまされた



コミュニケーション失敗の結果

- 政府、科学界の混乱、無力に失望
- 原子力界、科学の信頼も、大きく失墜
- 適切なコミュニケーションがなかった
- 市民の動揺、極端な反原発論が拡大
- 失われた信頼を取り戻すには？

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英国政府の情報公開

Sir John Beddington・英国政府主席科学顧問

- 発生5日後、事故の最悪想定と見通し発表
- 核燃料冷却失敗で溶融、爆発もある
- 暴走+爆発+火災事故 Chernobylとの違い
- 放射性物質の上昇、500mまで
- メルトダウン最悪想定でも30km避難で十分
- まず見通しを公表することが重要
 - 結果から振り返れば、最も大局観

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Sir John Beddington

- 緊急時科学助言グループ(SAGE)を招集
 - 政府合同会議(11年3月15日)で事故概要・見通しを説明
 - 直後に日本の英国大使館でレク
 - 半径30km以上、健康影響なし
 - 東京から脱出の必要なし
- パニック回避、騒動の鎮静化



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“Better out than in”

Prof. Robin Grimes, ICL Materials Physics
Chief Scientific Adviser to the Foreign and Commonwealth Office



- まず、決断し、伝える — これが最も大切
- 不正確な部分があれば、即時訂正してゆく
- **情報を出さなければ、不安・非科学的流言が拡大**

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英国 信頼回復への20年

- BSE事件の徹底検証と反省、改革、実行
- 深刻な信頼喪失
- 「絶対」、「確実に」 → これをやめる
- 「Uncertainty of science」の理解普及
- 科学は流動性・不確実性と不可分
- 啓蒙主義、教育主義、上から目線では・・・
- 科学はだれのものか？
- Public engagement with science

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日本の信頼回復をどうするか

- **National securityの原点から考え直す**
- エネルギー・原子力政策を明確に示す
- 過酷対策の徹底、情報、指揮系統の構築
- マスメディアのチェック機能と発信力向上
- **リスク、Uncertaintyの理解を広げる**
- 政府・科学界・市民・メディアをつなぐ
- トランスサイエンス・コミュニケーション

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Uncertainty of science

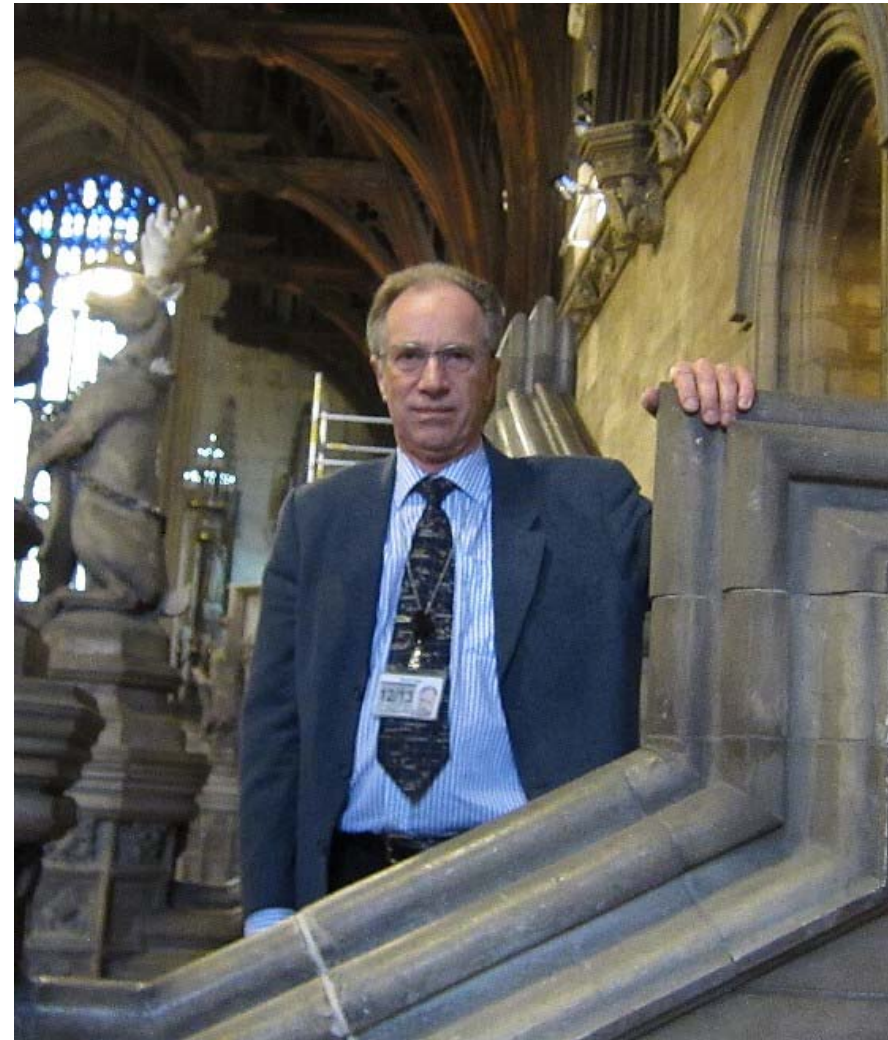
- Uncertainty of scienceを考える
- 「不確実性」 → ぴったり該当しない表現
- 科学には不安定性、変動性が内在している
- 「科学的」は、「絶対」との誤解を解く
- 市民の不安、健康や安全性 → ゼロリスク
- リスクをきちんと伝え、受け止めてもらえないと → 科学そのものへの不信が拡大



Prof. David Cope: Former Director of Parliamentary Office of Science and Technology

- We could not deal with the accident much better than Japan.
- However, we could **communicate** to the public promptly.
- We have been learning **science communication** with cases such as an BSE problems.

He was in Tokyo at that time.



Shigeyuki Koide



ありがとうございました

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