

# Rare Earth Refinery Plant: The Need for Effective Risk Communication

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JAWATANKUASA PILIHAN KHAS  
MENGENAI PROJEK LYNAS ADVANCED MATERIALS PLANT (LAMP) Mei 21, 2012

# ***A bit about my credentials...***

- Senior Professor at the University of Malaya
- Senior Consultant at the University of Malaya Medical Centre
- Qualified and trained in medical physics
- More than 30 years of experience in radiation protection, radiation dosimetry and medical imaging
- Consult for IAEA, WHO, ICNIRP
- Leading research initiative in risk communication (in addition to other research areas)



# Crazy truck



You have made an *instant risk assessment* which starts immediately from cause (the truck) to effect (something bad happening).

Your decisions to act are based almost entirely on *your own images, perceptions and judgments.*

# Trust

The process that leads you to take action based on your images of the consequences of radiation is the **same process** that occurs when someone is confronted with a **radiation issue** and reacts with concern or anger

Your decisions are primarily **based on your level of trust** and confidence in the information source; your **sense of fairness**; and your **level of control and choice** over the hazard

# Trust

Your decisions are only ***secondly based on the information*** provided

If you don't trust the information source or the information provided, you will (*quite rationally*) make decisions based on peer group, media, and information available on the internet and through social media

# The Effect of the Media



**Vivian Norris**

Producer

GET UPDATES FROM VIVIAN NORRIS



217

## Fukushima's Nuclear Nightmare Is Far From Over (or the Disturbingly Deadly Act of Placing Profits Before People)

1.) **SEAFOOD:** Question the origin of ALL seafood. Fish and crustaceans from the Pacific Ocean should all be considered to be poisoned with radiation.

Home :: Entertainment

### Deadly radiation from Fukushima could remain for decade

ANI

Tokyo, Tue, 24 Apr 2012

Tokyo, April 24 (ANI): After the deadly earthquake and tsunami in Japan, airborne radiation levels from the Fukushima nuclear power plant are expected to remain at or close to dangerous levels at least until 2022, according to a government report.

Government officials have projected that the annual radiation dosages could exceed 50 millisieverts in and around the towns near the plant. CBS News reports.







*Die lah, radiation is coming !*



# Anger over revised limit

Standard now allows greater radiation exposure than before disaster



**TOKYO:** Furious parents at the centre of Japan's atomic crisis and hundreds of their supporters rallied in Tokyo against revised nuclear safety standards in schools they say are putting children at risk.

Japanese children can now be exposed to 20 times the radiation that was permissible before the March 11 tsunami caused a meltdown at the Fukushima nuclear plant, sparking the world's worst nuclear crisis since Chernobyl.

Around 400 protesters, many from areas around the stricken plant, flocked to the education and science ministry to demand a rethink on the new limit, which allows exposure of up to 20 millisieverts a year.

A group of Fukushima residents submitted a letter for the education minister demanding the ministry do all it can to lower radiation levels at schools and offer financial support.

Protest organisers said the radiation limit for playgrounds was about



**Just saying 'no':** A protester holding a placard as she joins a human chain around the Education Ministry in Tokyo yesterday, demanding they protect children from radioactive contamination at Fukushima prefecture. **AFP**

# Common Basis of Radiation Fears

- Fearful images of consequences, such as cancer and death
- Dread and expectations of catastrophic consequences
- No way to know if you have been exposed
- If you know, it may be too late
- You do not know what will happen, but you know it will be bad
- Possible effects on children and future generations
- Possible long-term harm to property and property values
- You have no control and there is no escape



# HAZARD AND RISK



- Driving a car is a potential health hazard. Driving a car *fast* presents an *increased risk*. The higher the speed, the greater the risk of accident.
- *Every human activity has an associated risk.* It is possible to diminish risks by avoiding, physically controlling, insuring against, or monitoring and communicating about specific activities (e.g. living in an earthquake zone), but one cannot abolish risk entirely.

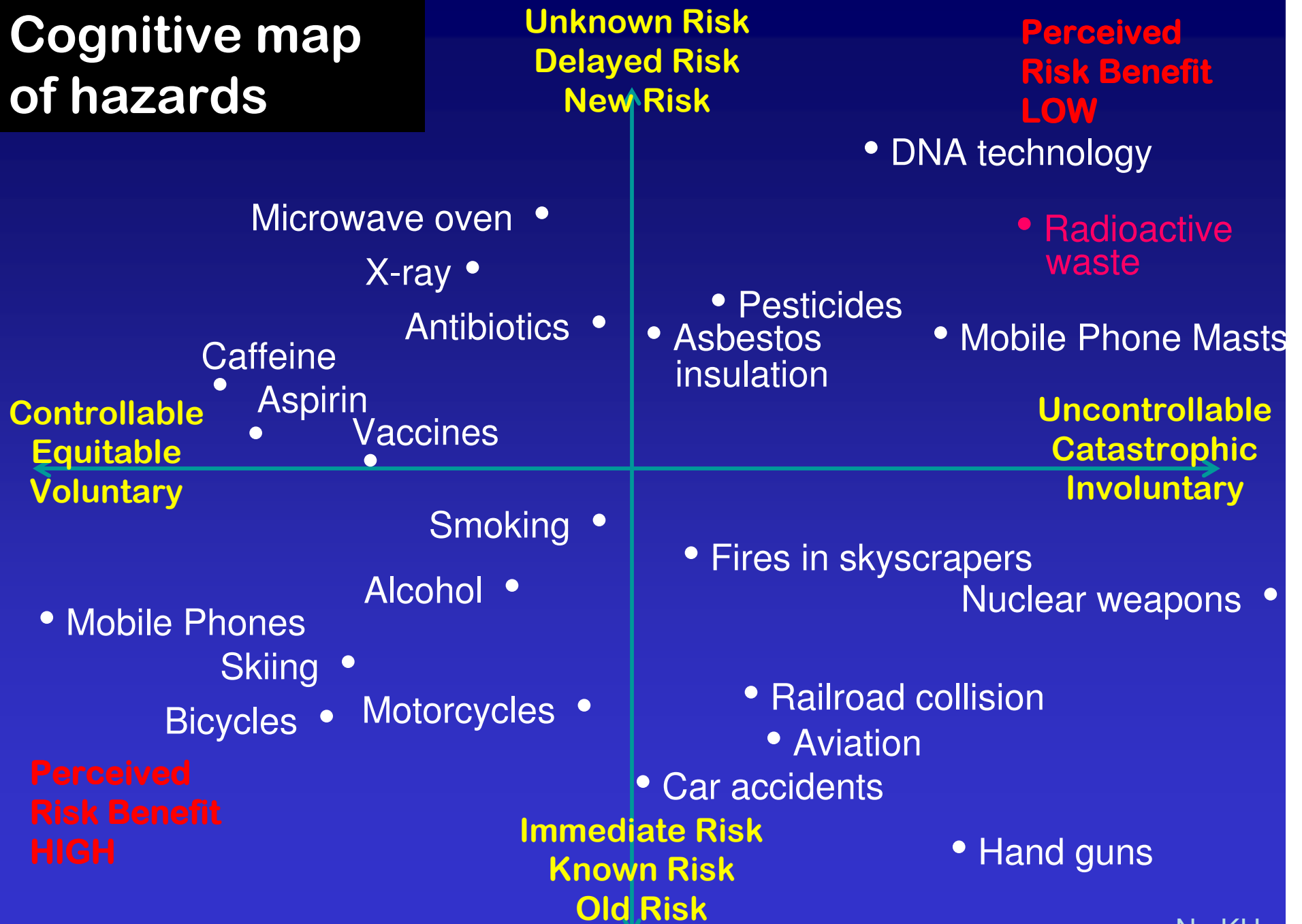
# Hazard and Risk

- The hazard is electricity. The risk is the likelihood that a worker might be electrocuted because of exposure to electrical wires that is not properly insulated. (Immediate effect)
- The hazard is overhead power lines. The risk is that long term exposure to low level electromagnetic fields from power lines has been associated with increased incidence of childhood leukemia. (Chronic effect)

# Risk Acceptability

- In the real world, there is no such thing as a zero risk.
- But Government is required to manage risks to the population and to the environment to acceptable levels.

# Cognitive map of hazards



Living with uncertainties

Ignorance

Uncertainty

Anxiety

Fear

Aggression and Violence

# PERCEPTION OF RISK



# Risk Perception

- **Experts and non-experts – perceive risks differently – but according to internally logical criteria**
- **We live in a risk averse society; people want zero risk or proof of no risk; and they want to be consulted**
- **People will not tolerate risks without benefits (Not In My Back Yard is more complex than simple opposition for opposition's sake)**
- **If there is a power line near to their home but it supplies power to another suburb, people see that they are exposed to hazard of electro-magnetic fields for no benefit**
- **People want some involvement and consultation /control on decision making**

# Risk Perception

- Not In My Back Yard (NIMBY) syndrome is actually a complex phenomenon\*
- People feel they can only say “NO!” because they have no other way to influence the issue

\* Kemp R (1990), Why not in my backyard? A radical interpretation of public opposition to the deep disposal of radioactive waste in the United Kingdom. *Environment and Planning A*, 22, 1239 - 1258.

Kemp R (1992), *The Politics of Radioactive Waste Disposal. An International Perspective*. Manchester, Manchester University Press.

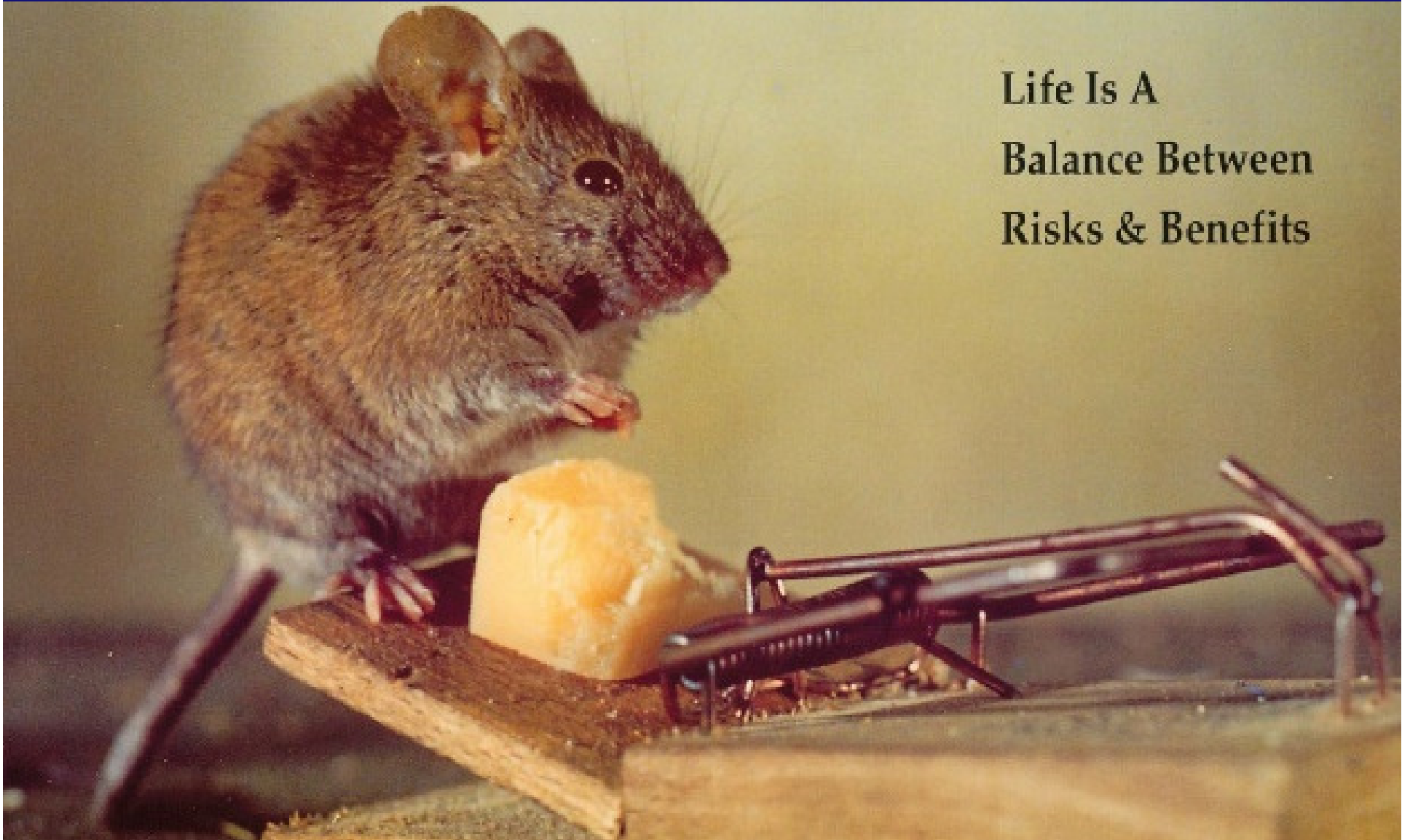
# Risk Perception

*Solution:*



*Effective Risk  
Communication and  
Dialogue*

**Life Is A  
Balance Between  
Risks & Benefits**



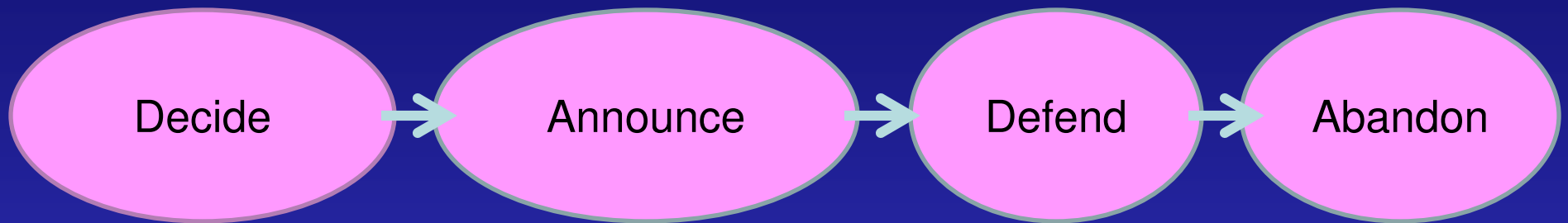
# Evolution of public and stakeholder involvement

- 1950s: Public just wanted to be informed
- 1960s & 1970s: Public wanted to be heard before decision
  - beginning of public involvement
  - public hearings and testimony
- 1980s: Public wanted to have impact on decision
  - consensus building
  - public dialogue
  - public a legitimate partner or stakeholder
- 1990s: Need to identify stakeholders who are unaware
  - outreach
- Today: Instantaneous stakeholder involvement on Internet & social media

The established field of expertise known as “*risk communication*” addresses the public and stakeholder perceptions of radiation, health and environmental risks *in a planned and integrated manner*.

*Best practice* is to engage and have dialogue with stakeholders of different perceptions of the risks to resolve their concerns.

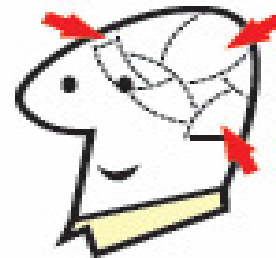
# Old Model of Risk Communication



 Risk Messages 



Blah!  
Blah!



# Today's 2-way Risk Communication



Two way give and take  
Information exchange

Generate new ideas,  
Uncover concerns

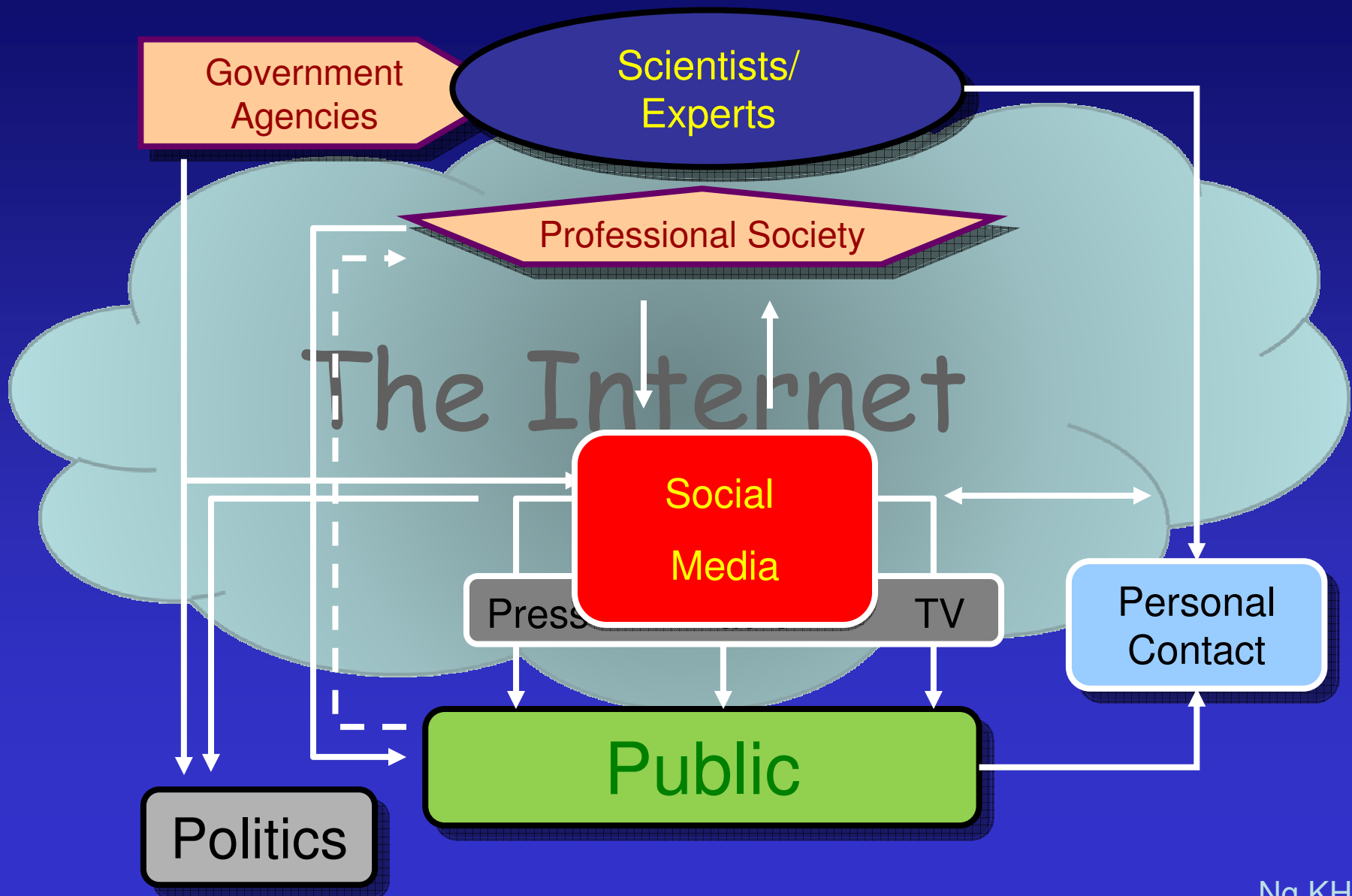


Win-Win-Win





# Flow of information related to Risk



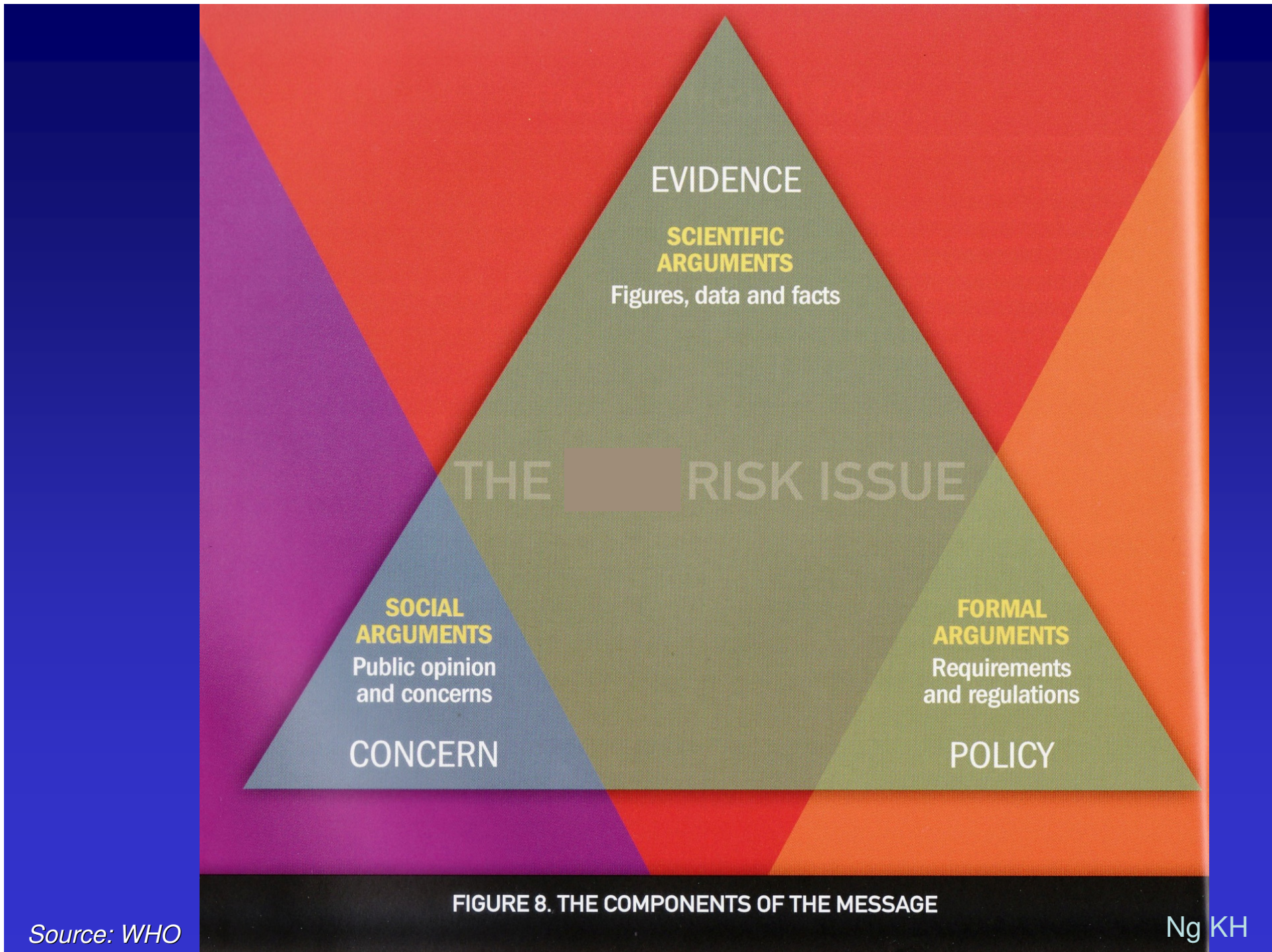


FIGURE 8. THE COMPONENTS OF THE MESSAGE



# **BUILDING EFFECTIVE COMMUNICATION**

*EFFECTIVE RISK COMMUNICATION is concerned with both:*

- **CONTENT**, and
- **PROCESS**

*BOTH MUST:*

- **INSPIRE TRUST**
- **BE ATTENTIVE to PEOPLE'S CONCERNS**, and
- **MAINTAIN TRANSPARENCY THROUGH OPEN DIALOGUE**

*THIS REQUIRES:*

- **PLANNING**,
- **SKILLS**, and
- **INVESTMENT in TIME and RESOURCES**

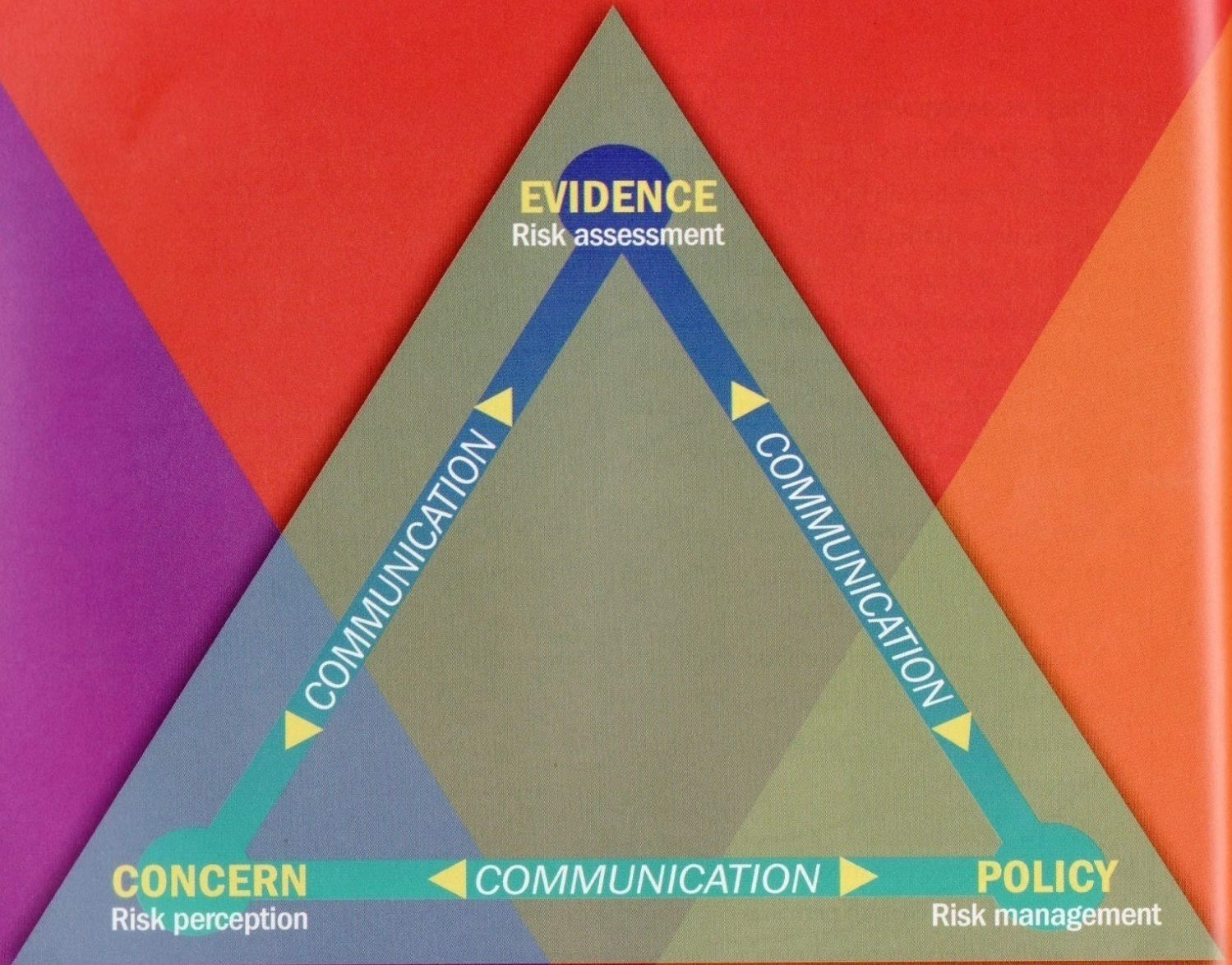


FIGURE 5. CHANNELS OF COMMUNICATION



# CHALLENGES

- Determine if there is a hazard from radiation exposure and what the potential health impact: **risk assessment**
- Recognize the reasons why the public may be concerned: **risk perception**
- Implement policies that protect public health and respond to public concerns: **risk communication and risk management**



# MCMC - UNIVERSITY OF MALAYA RESEARCH COLLABORATION ON RISK COMMUNICATIONS

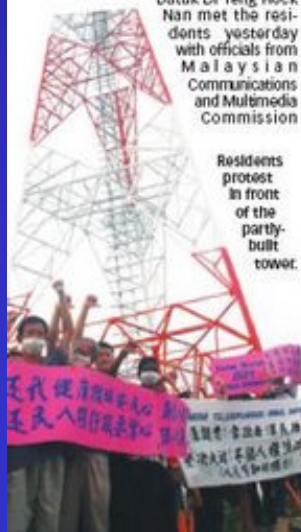
## Addressing public concern on radiofrequency exposure from wireless communication

### Stop-work order on tower project

by Regina William  
newstext@thesunday.com

**PENANG:** The state government has issued a temporary stop-work order on the construction of a telecommunications tower on Sokok Sungai Pinang following protests from about 5,000 residents.

Local government committee chairman Datuk Dr Teng Hock Nan met the residents yesterday with officials from Malaysian Communications and Multimedia Commission



Residents protest in front of the partly-built tower.

(MCMC) and PDC Telecommunications Sdn Bhd, which put up the tower.

Teng said the temporary stop-work order was issued to allow the situation to be assessed.

However, he said the construction of the tower followed the guidelines and regulations set by MCMC, including a 30m buffer zone from any residential unit.

The usually calm and composed Teng almost lost his cool when his patience was tested to the limit after being verbally abused by residents who insisted the tower be relocated.

Some of them threatened to vote for the Opposition in the next general election if the matter is not resolved soon.

Teng advised the residents not to be emotional over the issue as it can be resolved amicably.

He also tried explaining to the residents the need for the tower, which is jointly being put up by three telecommunication companies (telcos) to cater to the needs of mobile phone users following the drastic increase in population in the area over the past few years.

"There are three towers located in different areas now but these are insufficient and mobile phone users have been complaining about the poor services," Teng said.

"With the construction of this tower, the needs of these mobile phone users will be taken care of."

Following discussions with the residents, Teng directed that the construction of the tower be halted and urged the respective telcos to enhance the capacity of the existing three towers.

## RESEARCH OBJECTIVES

1

To examine the reporting of RF-EMF in the local dailies (i.e. Bahasa Malaysia, English, Chinese), in terms of:

- the focus of the reporting
- who are reported in the articles
- the issues discussed

2

To investigate the perception of RF-EMF among different stakeholders in terms of:

- impact of RF-EMF on health
- attitude towards RF-EMF
- factors that contribute to the perception of RF-EMF

3

To suggest ways of employing risk communication strategies to deal with different stakeholders, especially the public.

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Collaboration between



## Risk Communications Research for Electromagnetic Field (EMF) from Radio Frequency (RF)



Ng KH



# Some Errors



[Why rare earths?](#)

[Who is Lynas?](#)

[FAQ](#)

## What are rare earths? The answers are here.

Rare Earths are a unique group of fifteen chemical elements in the periodic table known as the Lanthanide series.

Rare Earths are essential for many hundreds of applications. Their versatile yet specific; metallurgical, chemical, catalytic, electrical, magnetic and optical properties have given them a level of technological, environmental and economic importance considerably greater than might be

### What about radiation?

Even though low-level radiation is part of daily life and all around us we understand the concern and have rigorous processes to limit any exposure. There is low-level radiation from sunlight, from appliances such as televisions, radios, mobile phones, computers and light globes and from basic medical procedures. Exposure to our rare earths poses no more risk than these everyday occurrences.

Ng KH



# DISTRUST

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Rare earth  
plant safer  
than watching  
TV, says firm

# DISTRUST

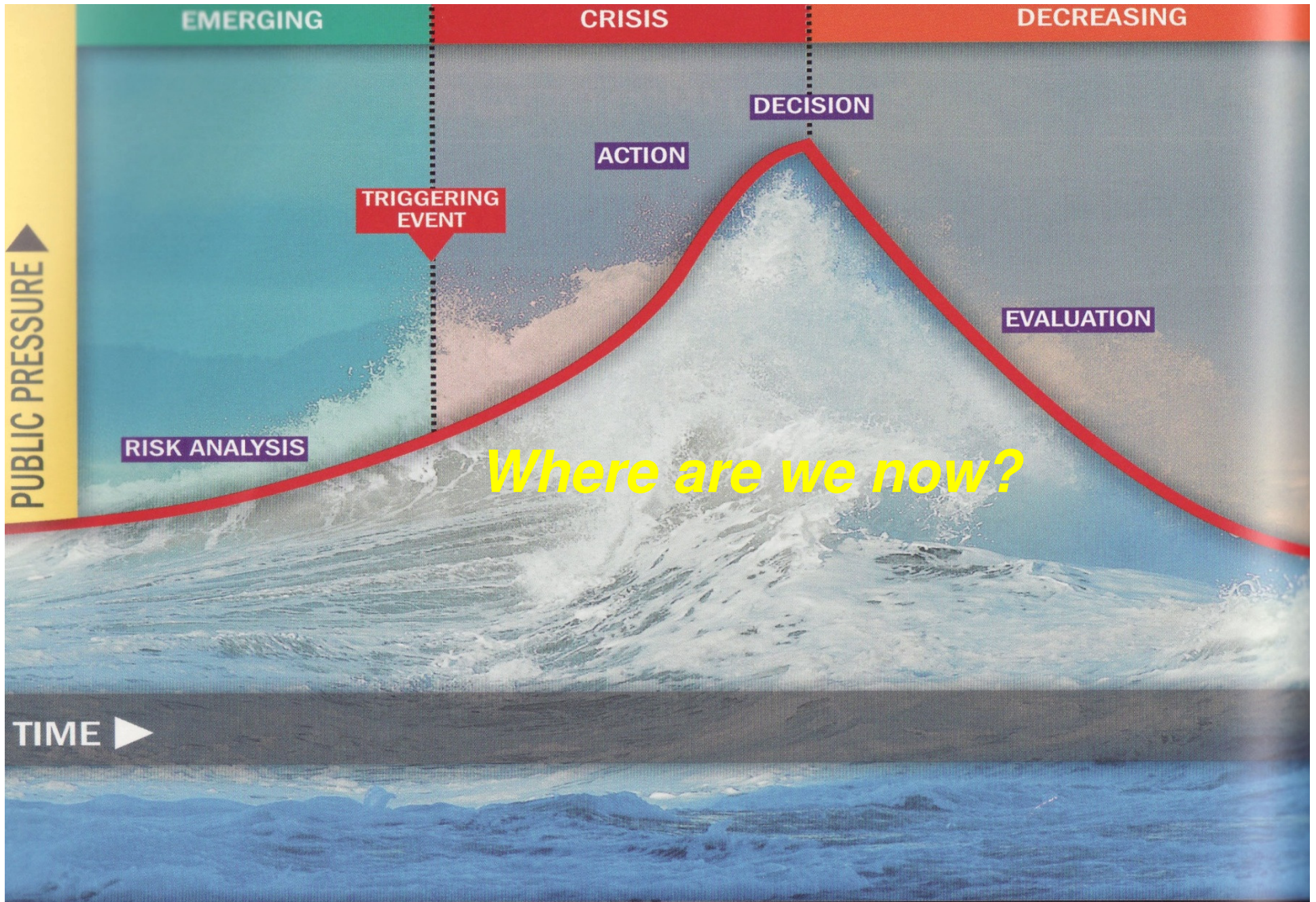


“Watching television for 4 hr a day can cause 10 times more radiation than what you will get from a rare earth refinery plant”

*Is there radiation emitted from the TV?*

*An outdated comparison still circulating today*





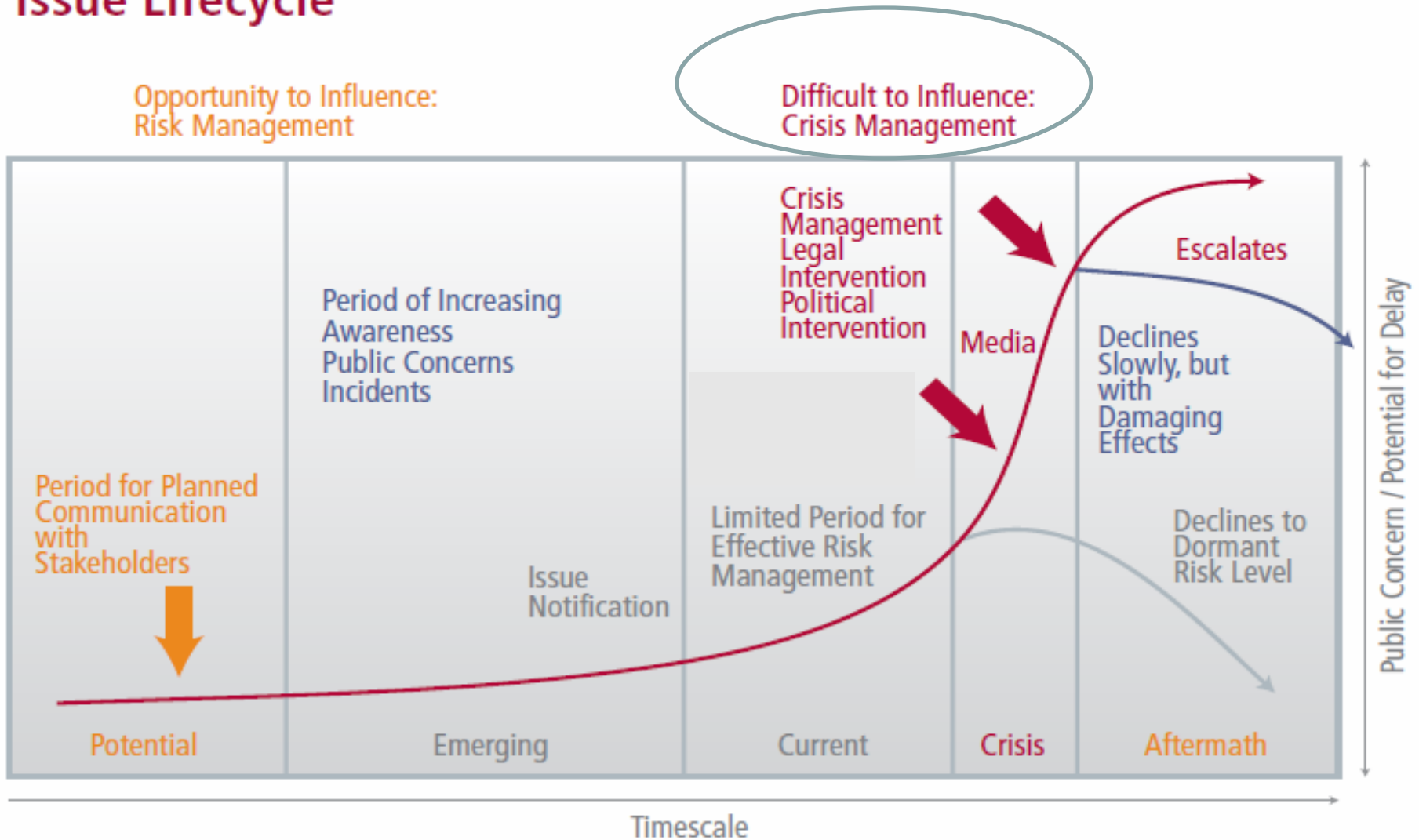
**FIGURE 6. THE RISK PERCEPTION LIFE CYCLE**

(adapted from *Evaluating Response Options*, Judy Larkin, Proceedings of the International Seminar on EMF Risk Perception and Communication, WHO 1999)



# Where are we now?

## Issue Lifecycle



# Some recommendations

1. Deal with the complacency about perceived risks which is leading to a crisis in communication and in Trust.
2. Learn to communicate with diverse target audiences such as parents of young children, the elderly, the concerned, and the confused.
3. Address this before the crisis escalates further.

# Some recommendations

4. **Help to Raise Public Awareness** – the public should be helped to understand radiation and units, e.g., Bq, Sv as familiar as with kg, m, °C, etc.
5. **Provide the Public with accurate and timely Information** – e.g., background radiation level, international standards & regulations, environmental factors affecting health
6. **Require Lynas to adopt best practice risk communication** – Lynas should apply effective two-way communication and best practice
7. **Find a Trusted Third Party Mediator**

# Some recommendations

8. Learn from Past Mistakes and Resource a Modern Public and Stakeholder Engagement and Awareness Programme – investment in the Venture should be matched by significant investment in effective risk communication





***Thank you for listening to me***

*With thanks to Prof. Ray Kemp, PhD, MRTPI*

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