

Risk Communication



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for Environmental Health

Centre de collaboration nationale
en santé environnementale



Canadian Institute of Public Health Inspectors

Checklist

- **Translate scientific findings**
- **Explain uncertainty and knowledge gaps**
- **Credibility and Trust**
- **Public's framing of risk issues**
- **Public's perception**



What is Acceptable Risk?

What would you do for money?

Risky activities – fun/money



What is Acceptable Risk?

- **Acceptable Risk is a judgment call based on own values and past experience**
- **What is acceptable to you may not be acceptable to your neighbour**
- **Risk vs. benefit**

What is Acceptable Risk?



What are Outrage Factors ?

**Risk Management is a balance
of hazard and safeguard and**

OUTRAGE FACTORS



* @ & # !

Actual versus Perceived Risk

Actual Risk:

**What science says may
actually happen**

Perceived Risk:

**What the public think may
happen**

What are Outrage Factors?

*Examples of failed or successful
risk communication episodes*

Gerber Baby Food 1986



Glass in baby food

- **Of the 14,000 cans tested, only 12 had glass fragment (0.027%)**
- **Using refractive index, US FDA determined glass in baby food not to be a health concern**

Gerber Baby Food

1986

- Produce 1,350 million jars, or 365,500 jars with glass fragment
- Who benefit?
- Who suffer?



Experts and lay people have very different ideas about risk

Gerber Baby Food 1986

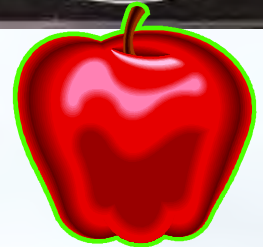
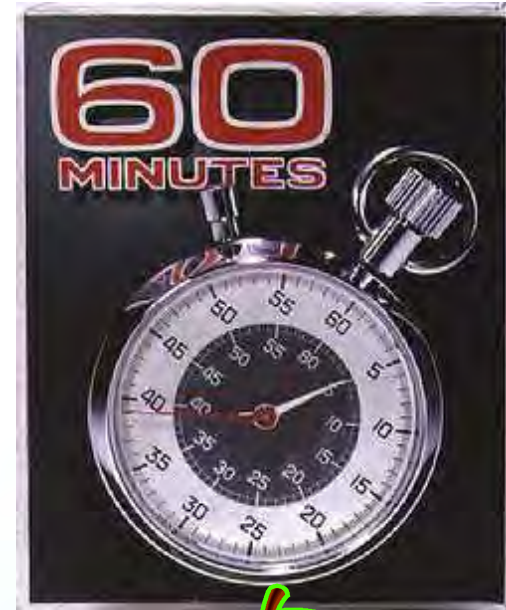


- Media coverage, impact on infants, unfair distribution of risk and benefit***
- Science facts and public perception are different***

Alar in Apple Juice 1989

Rocket fuel in all tetra pak juice made from concentrate

- **60 Minute: “...Alar is the most potent cancer causing agent in our food supply, and as many as 5,300 pre-school children could contract cancer from eating apples...”**



Alar in Apple Juice 1989

One Oregon woman was so panic-stricken she called 911 to dispatch police to stop school bus taking her child to school because she put an apple in the child's lunch box !!



Alar in Apple Juice 1989

- **Testing at 4 x MTD in mice, one group/45 developed tumors**
- **8 x MTD 11/52 tumors**
- **80% died from toxicity**
- **19,000 quarts of apple juice a day for life**
- **Calculation showed 3.5 cancer cases per trillion apple eaters**



Alar in Apple Juice 1989

- **Tested 25,000 apple products, only 1 contained Alar, at levels factors of 100 below allowable limit**
- **Public perception resulted in apples and Alar being withdrawn from market**
- **Cost \$100 million in Washington State alone**
- **Fallouts- “Food Libel” Law allowing processor to sue journalists and public interest groups**



Alar in Apple Juice 1989

**Risk communication strategy –
what do you tell panicking
parents?**

- **No internet !!!**
- **Ottawa faxed standard statement**
- **Public calling you !!!**



Risk Communication

- ***Provide science facts (knowledge)***
- ***Share responsibilities and dilemma***
- ***Turn involuntary risk to voluntary risk***

Risk Communication

- **To listen to and understand the public's concerns and address their outrage and perceived risk**
- **Take concerns seriously no matter how unreasonable it may seem**
- **Need to communicate scientific information using terms the public can understand to increase knowledge of facts**

Risk Communication

Goal:

- **Get your message and ideas across**
- **Convince the public of your point of view**
- **Get the public to do what you want them to do**



Risk Communication

- 1. Get credible spokesperson**
- 2. Show that you care, LISTEN and address concern**
- 3. Know your facts, acknowledge uncertainties**
- 4. Acknowledge mistakes, tell the truth, tell it fast and tell it all**

Risk Communication

- 5. Do not be too technical, be clear as to what you are saying, DO NOT BS**
- 6. Offer solutions and things to do**
- 7. Golden Rule**

Risk Communication

WHO?

**Provide information
from a credible
source**



Risk Communication

Use video tape

WHO? Watch with sound off,
watch for non-verbal
communication



Risk Communication

WHO?

**Provide
information
from a credible
source**

- doctor/health professionals
- industry
- federal government
- environmentalist
- academic
- special interest group
- local government agencies
- professionals (engineers)
- consumer groups
- media

Risk Communication

WHO?

**Provide
information
from a credible
source**



Components of Trust



High

ATTENTION

TRUST

CARING

DISTRUST

RESPECT

Low

High

COMPETENCE

Risk Communication

***Before the public care
what you know, they need
to know that you care !!***

***Need to know their value
are being addressed and
maintained !!***

Risk Communication

***The more we trust, the
less afraid we will be***

***The less we trust, the
more afraid we will be***

Risk Communication

**Knowing the facts is important because
it can influence your message:
evidence-based decision making**

Arsenic at 25 $\mu\text{g}/\text{L}$ (MAC 10 $\mu\text{g}/\text{L}$)

**Five year compliance period after the
released of new MAC by Health
Canada**

No Drinking Water Advisory to be issued by MOH and EHO:

Due to concentrations of arsenic in the X water system that exceed the MAC, AHS is advising all residents and businesses in the Village to stop drinking the tap water immediately. Additionally, tap water from this system should not be used to make baby formula, baby food or juice at this time; nor for the preparation of any food or beverage.

No Drinking Water Advisory to be issued by MOH and EHO:

To ensure safe drinking water is immediately available, Village X will deliver bottled water directly to all affected residents this evening.

Beginning tomorrow, the bottled water will instead be made available to all residents for pick-up at xxx

No Drinking Water Advisory to be issued by MOH and EHO:

“While the concentration of arsenic at current levels presents a very low risk to public health, we feel it is prudent to ensure residents and users of this water are aware of the potential long term health risks, and advised of appropriate steps to reduce their intake of arsenic,” says Dr. GB, Medical Officer of Health, AHS

MAC is lifetime exposure

Subchronic exposure level (5-years) for young children (aged 0 to 6 years) is 0.005 mg/kg-day or 5 µg/kg-day

A 0-6 month old infant with 100% intake from formula milk made with As level of 30 µg/L; with average volume (for 6 months old) of 0.7L and average body weight of 7.8 kg

**Total As intake = $(30 \text{ µg/L} \times 0.7 \text{ L}) / 7.8 \text{ kg}$
= 2.6 µg/kg/day**

MAC is lifetime exposure

Subchronic exposure level (5-years) for young children (aged 0 to 6 years) of 0.005 mg/kg-day or 5 µg/kg-day

For two year old child, average daily water consumption is 0.7 L, average As intake in food is 14.9 µg and average body weight of 12.8 kg

Total As intake = $[(30 \text{ µg/L} \times 0.7 \text{ L}) + 14.9 \text{ µg}] / 12.8 \text{ kg} = 2.8 \text{ µg/kg/d}$

MAC is lifetime exposure

Subchronic exposure level (5-years) for young children (aged 0 to 6 years) of 0.005 mg/kg-day or 5 µg/kg-day

For adult with average daily water consumption of 1.5L, average As intake in food of 42 µg and average body weight of 70 kg

Total As intake = $[(30 \text{ µg/L} \times 1.5 \text{ L}) + 42 \text{ µg}] / 70 \text{ kg} = 1.24 \text{ µg/kg/d}$

Risk Communication

Instead of a no water advisory (crisis), issued a statement in the villages' newsletter that they send out monthly to each resident outlining actions taken

Turning a crisis situation with immediate no water advisory causing panic and questions to a nicely controlled communication PR event using good science and common sense

Risk Communication

- **Acknowledge prior misbehaviour-repeatedly**
- **Acknowledge current problems – repeatedly**
- **Discuss achievements with humility**
- **Share control and be accountable**
- **Bring the concerns to the surface**

Risk Communication

Jack-in-the Box *E. coli* outbreak, 1993

- **708 cases of *E. coli* poisoning, 41 cases of HUS with 4 dead (started in November 1992)**

- **Notified by health department on Jan 15**

Avoidance strategies: denial of intention, denial of violation (conscious choice) and scapegoating

Risk Communication

Jack-in-the Box *E. coli* outbreak, 1993

- **Jan 18: Not solely responsible for the outbreak, pointing to the fact that customers not only ate at Jack in the Box, but other establishments as well**
- **“...We are as much the victim here as the children, the supplier gave us meat not fit for consumption as in contract. We have filed suite against them...”**

Risk Communication

Food supplier: “this is the worst thing our company has even done. We knew about *E. coli*, thought we had program... but obviously not good enough for this new strain. We were at fault and we feel horrible...we continue to be confident that our processing did not contaminate the meat. Health authorities have made it clear that proper cooking would have prevented this tragedy...”

Risk Communication

Jan 21: Admitted that the source of the problem was contaminated meat, but it was the health department's fault for not notifying them of new cooking temp requirement



Risk Communication

- Later reported that they were warned by health departments and their own employees that they were undercooking their hamburgers prior to the outbreak, but decided that cooking beef to 155°F made the meat too tough



Risk Communication

Jack-in-the Box *E. coli* outbreak, 1993

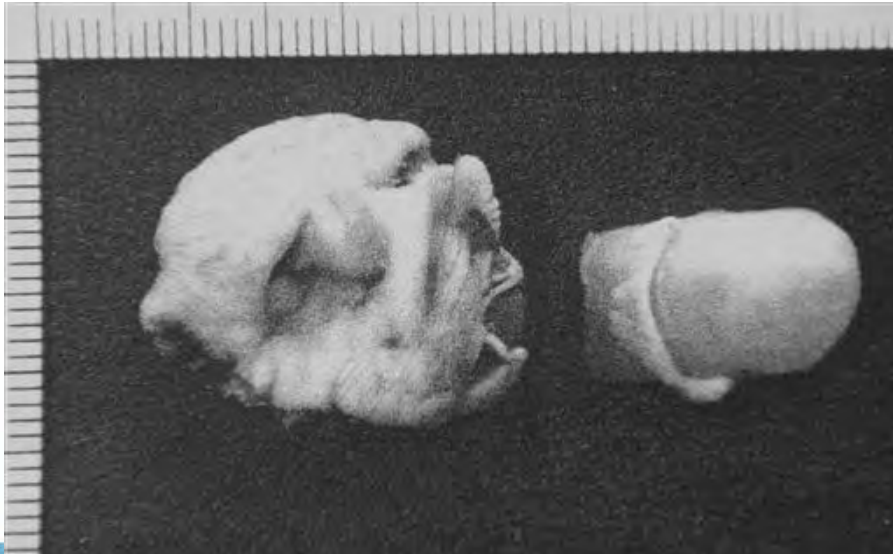
Eventual cost:

- **US\$55 m in legal**
- **US\$44 m to franchises**
- **US\$ 8 m to shareholder**
- **Business loss of US\$20 to \$30 million by March 1993 and \$160 million in 18 months**
- **Who was the meat supplier?**

Risk Communication

Wendy's Finger in Chili – 2005

“...if something was done to Wendy's, we will work to bring those people to justice...”



“...if problem came from within, we will work to make sure it never happened again...”

Risk Communication

Tylenol in 1982

Extra-strength Tylenol was the most successful product at that time, with 37% of market share, outselling the next four leading painkillers combined



Risk Communication

Cyanide found in tainted capsules in pharmacies around the Chicago area

- **Seven dead**
- **Notified by reporter through medical examiner**



Risk Communication

Strategy: "How do we protect the people?" and second "How do we save this product?"

Immediately alerted consumers across the nation not to consume any type of Tylenol product. Told consumers not to resume using the product until the extent of the tampering could be determined

Risk Communication

Withdraw all Tylenol capsules from the store shelves in Chicago and ordered a national withdraw of every capsule (\$100 million)

Showed they were not willing to take a risk with the public's safety, even if it cost the company millions of dollars. The public viewed Tylenol as the unfortunate victim of a malicious crime

Risk Communication

Remediation: Compensation to help victims of the crisis and provided the victim's families counseling and financial assistance even though they were not responsible for the product tampering



Risk Communication

Rectification: Taking action to prevent a recurrence of the crisis in the future. New triple safety seal packaging- a glued box, a plastic sear over the neck of the bottle, and a foil seal over the mouth of the bottle – the first product in the industry to use the new tamper resistant packaging just 6 months after the crisis occurred

Risk Communication

Most exemplary case ever known in the history of crisis communications

Forgiveness and Sympathy strategy for this crisis- seeks to win forgiveness from the various publics and create acceptance for the crisis



Risk Communication

Maple Leaf:

- **CEO at news conferences**
- **Held regular news briefing**
- **Took full responsibilities/blame**
- **Not the fault of the government !!!**
- **Move quickly to settle lawsuits**



Risk Communication

Maple Leaf:

- Shut plant**
- Recall more products than needed**
- Appoint new senior management position of chief food safety officer**
- External Advisory Panel**
- Newspaper ads (also at 1 year anniversary)**



Risk Communication

Maple Leaf outbreak a prime example of:

- Admitting the problem, again and again**
- Showing penitence, make amends and explained what the company is doing about it**
- Learn from mistake and experience and resolved to do better**



Risk Communication

Globe and Mail on PH Officials Sep 11:

- Handling of the Listeriosis outbreak is a disgrace

CTV Sep 20:

- Public health officer absent during outbreak

- Canada's chief public health official has not been the lead voice to inform the public



Risk Communication

- **Tell it all**
- **Tell it fast**
- **Tell the truth**

Public tolerate mistakes, but will not tolerate stonewalling or lying or cover-up



Risk Communication

**Be sure of your facts
(credibility)**

Don't BS

Frontfelloff



Risk Communication

HOW?

- Don't be too technical
(what is 10^{-4} ?)
- Don't use math
- Don't talk down
- Use examples public can understand

What is one-in-a-million?

- **10 times more likely to die after bitten by a poisonous snake or lizard in the US (1-in-1.2 m)**
- **If blindfolded and holding a pin, and there is an ant on a football field, chance of piercing that ant with pin is 1-in-14 million**

What is one-in-a-million?

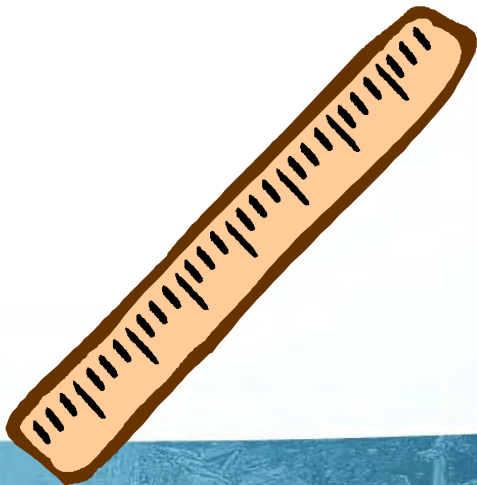


$${}_{49}C_6 = 13,983,816$$



One Parts per Million

16 miles



One Parts per Million

*1 second in
two weeks
(1,209,600)*

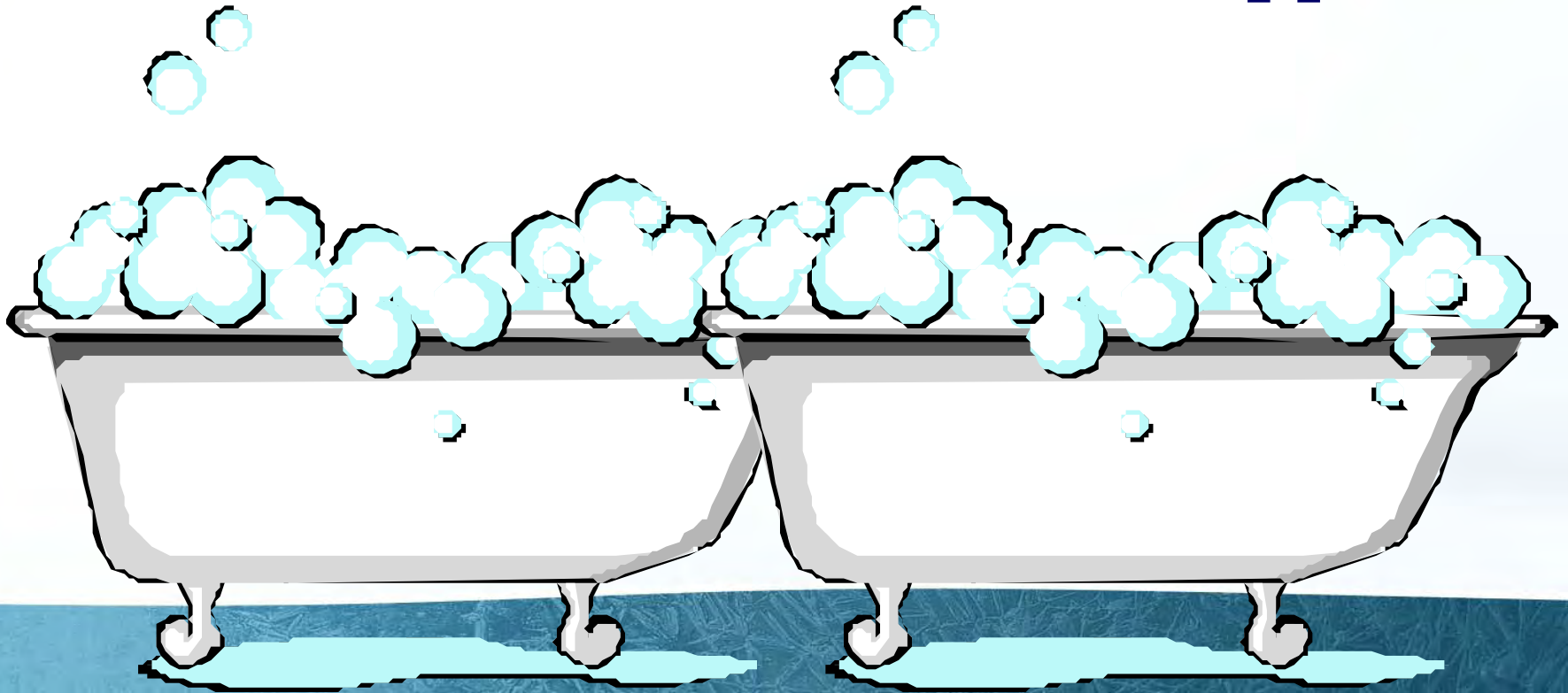



One Parts per Million



50 ppm

- **50 drops = 50 mL = 1 teaspoon**
- **1 teaspoon in 1000 L of water (2 bathtubs) is 50 mL/1000L or 50mL/1,000,000 mL or 50 ppm**





This Room Is Equipped With
Edison Electric Light.

Do not attempt to light with
match. Simply turn key
on wall by the door.

The use of Electricity for lighting is in no way harmful
to health, nor does it affect the soundness of sleep.

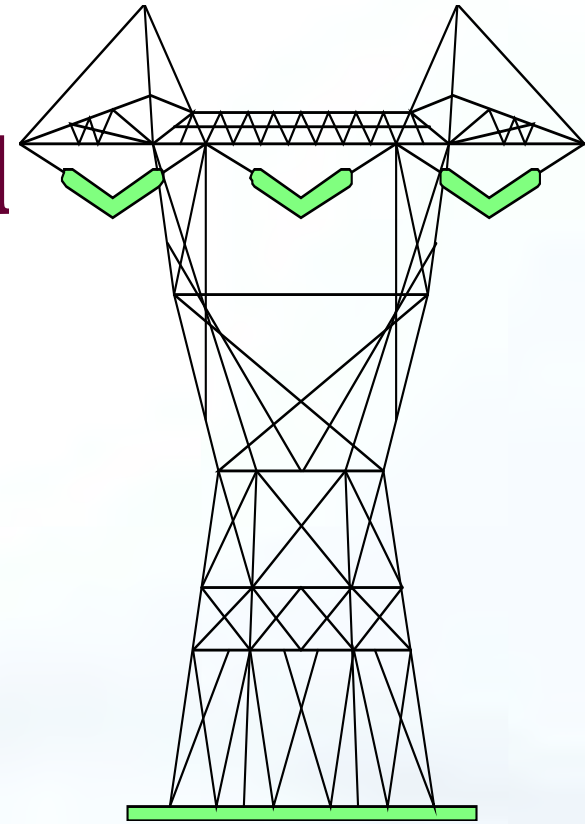
Electromagnetic Fields (EMF) and radiofrequency:

- Transmission
Lines**
- Cell phones**
- Wi-Fi**

Risk Communication

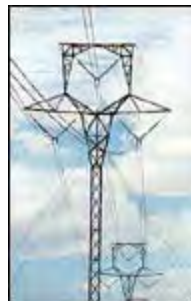
Power Lines and Electromagnetic Field

- **Increase in childhood leukemia rates**
- **1 in 10,000 to 4 in 10,000**



**Parent Lobby
Derails School,
Oct 26**

**School
construction
halted over health
fears - Oct 27**



**Let experts give
high-voltage
advice Oct 31,
Editorials**

**School-Power Line
Controversy**

**Dubious science,
cancer fear win out -
Oct 29**

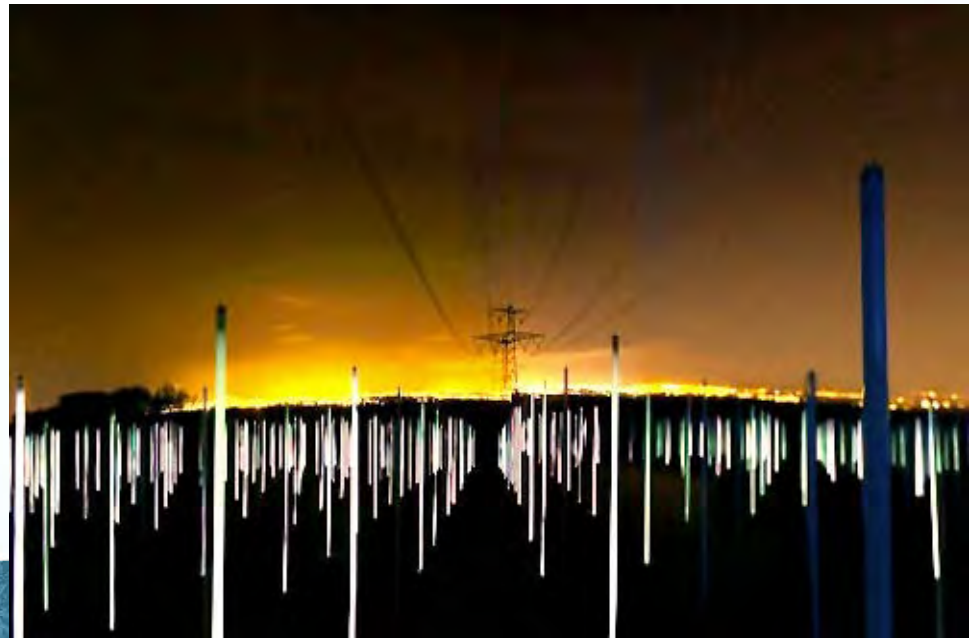
**Voodoo science threatens
safety of children
Letters, Oct 31**



Risk Communication

School board held a public meeting with parents to discuss locating the school within 110 meters from a set of power lines

**108 meters away,
magnetic field
readings of 2 mG**



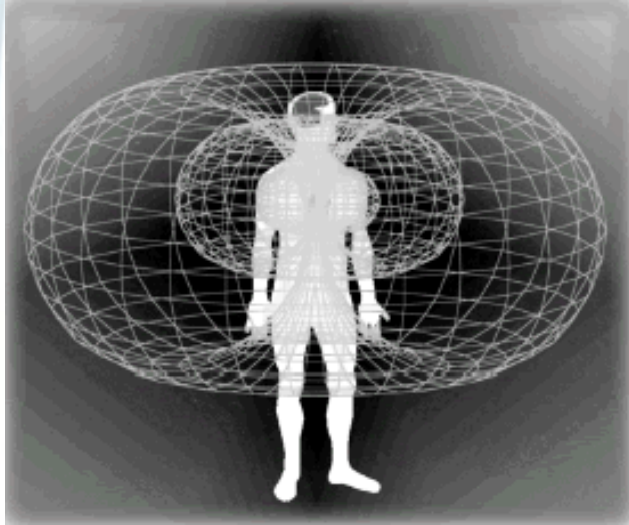


Electrical Engineer from Calgary utility

- **Probable carcinogen
(limited data from
human, insufficient
data from animal)**
- **No health risk**
- **Technical studies**



- Exposure levels from power line 2 mG compared to 100-200 mG from other appliances, therefore not a concern



**Will you let your family
live by power line?**



Set up





Health Professional

Same organization that inspect restaurants, give immunizations to protect your children

To provide information and not to speak for or against locating school close to power lines

Fear Factor



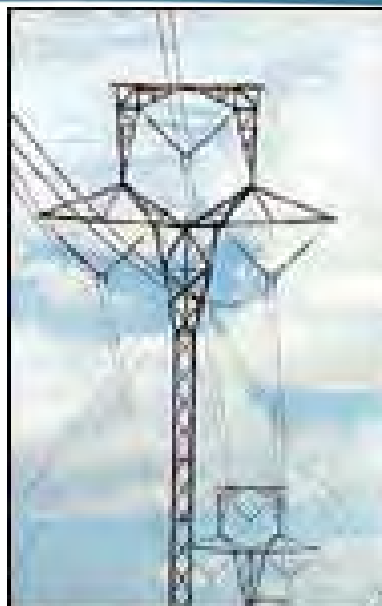
Magnetic field classified as Possible carcinogen !

Same category as coffee (urinary bladder cancer), pickled vegetables, dry cleaning

Solar radiation is a known carcinogen

Unknown and uncertainties





Staying at school at 2 mG for 8 hours would expose individuals to 960 mG

Using hair dryer or 15 minutes at 70 mG would give 1,050 mG exposure



Health
Canada

Santé
Canada



Per capita energy consumption:

1961- 2.66 Megawatt-hour

1971- 6.39 Mw-Hr

1981- 10.59 Mw-Hr

1991- 16.25 Mw-Hr

Leukemia rate for 5-9

1984: 4.35/100,000

1998: 2.77/100,000

Risk Communication

Gave public information on how to reduce EMF exposure in their home:

- **Electrical blanket**
- **Digital clock by night table**
- **Cell-phone base station by night table**
- **Baby monitor in crib**



**Will I let my family live
near a power line?**



- **Let public expressed their view**
- **Gain their trust**
- **Showed that I care and listened to their concerns**
- **Communicate using terms they understand and daily scenario they can relate to**
- **Give them control**

Industrial Heartland Collaboration
to Address Resident Interests

Public Health
Division

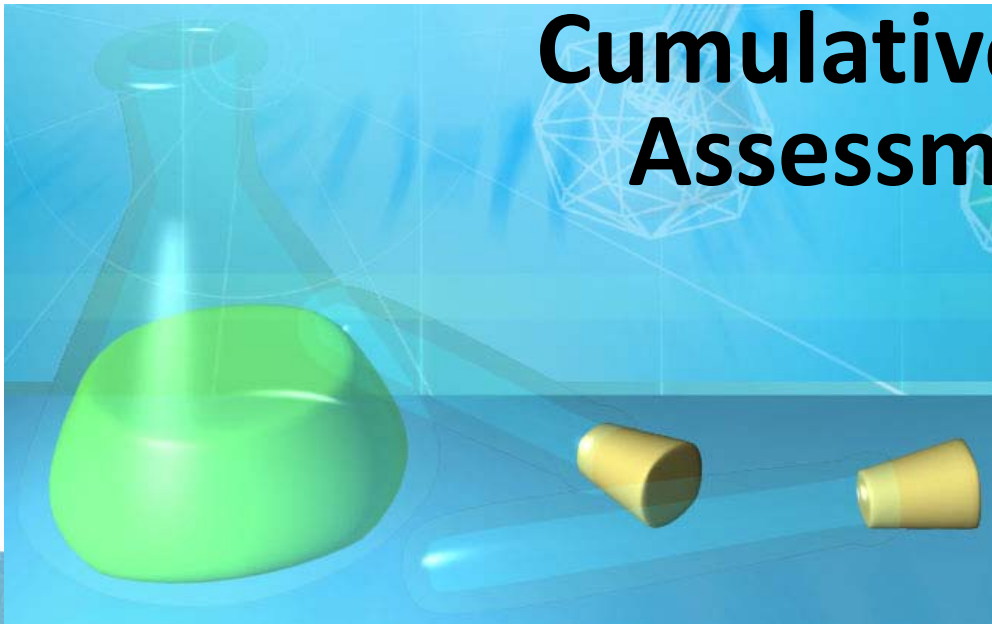


Capital
Health

Edmonton and area

Resident Issues Synergy Conference

Cumulative Risk Assessment



Risk Management and Cumulative Impacts

- **What is risk and acceptable risk?**
- **Studies that have been done and will be done**
- **What we know and what we don't know**
- **Things you can do**

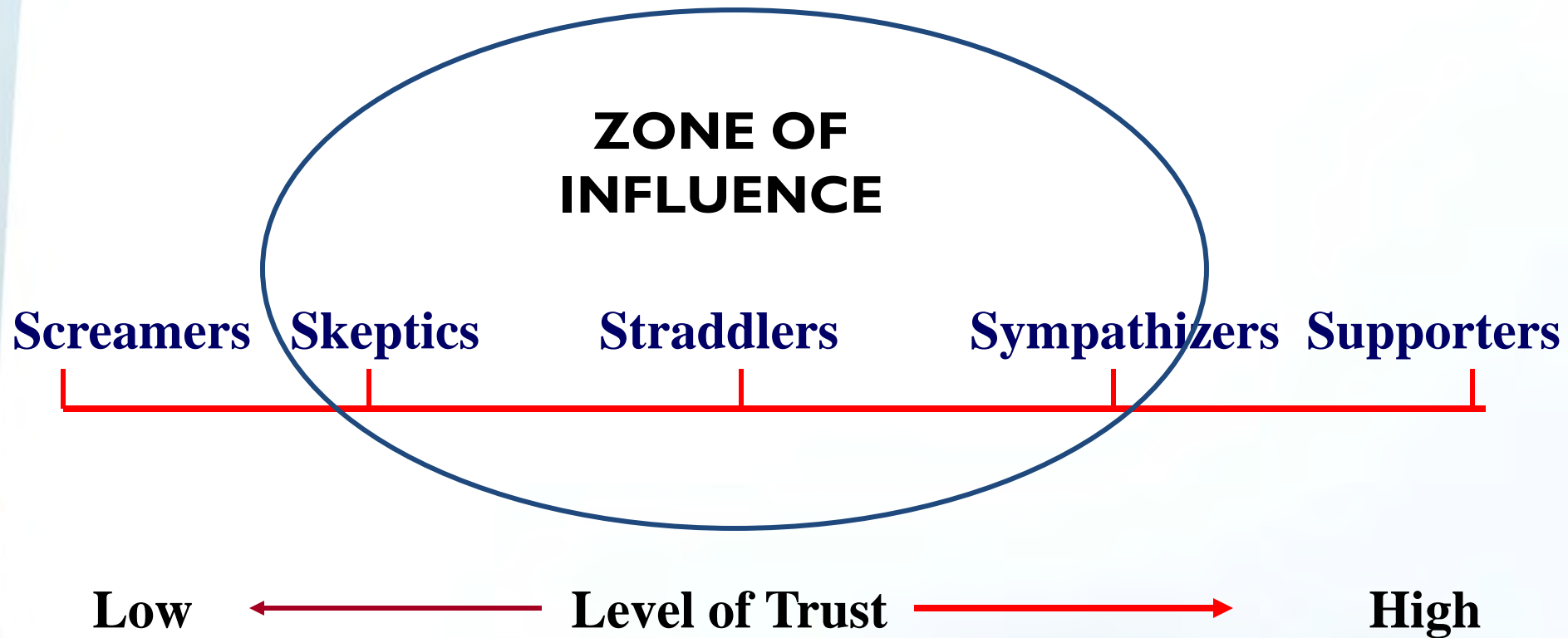
Risk Management and Cumulative Impacts

“...with deep knowledge and the ability to communicate it to lay people...I admired most was his commitment to the truth...to tell people how risk is measured in an honest and non-threatening manner...so they have the facts..”

Risk Communication

- **Don't tell the public not to worry, tell them what to do**
- **Explain risk-reducing steps (risk management)**
- **Share power and responsibility - accept and involve public**
- **Public has to learn to live with uncertainty**

ADDRESSING A CROWD



ADDRESSING A CROWD

The way you treat and listen to screamers and how you address their concerns will affect public trust and credibility with direct effect on how they perceive you

They are voicing issues for the rest – listen, show that you care and address them

ADDRESSING A CROWD

**People want to BE HEARD,
to VENT !!**

**Goal is to let them vent (in
front of journalists)**

**People get calmer as they
vent, they starting to
want to hear from you!!!**

**They want to know what
you think !!!**



ADDRESSING A CROWD

To control crowd (limit yelling and screaming):

- Hire consulting firm**
- Set up mikes**
- Outline speaking process but allow time to vent**
- Control time by individuals in speaking**

Canadians are very orderly people !!!

ADDRESSING A CROWD

- **Make sure there is enough time for them to vent**
- **First thing is to say “I HEAR YOU” – not “I know how you feel” because they will say “No you don’t”**
- **Say: if I hear you right, these are what you’re concern about...list them – they know you listened and you care!**

Risk Communication

Prepare for Emotional Questions

- **Are my children at risk?**
- **How will you deal with those who get sick?**
- **Can you guarantee my/family safety?**
- **What else can go wrong?**
- **What bad things aren't you telling us?**

Risk Communication

Q: Can you guarantee my family won't get sick?

A: I can guarantee that no one in this community is exposed to the affected groundwater, so there is no unacceptable risk associated with living in this community. The drinking water is safe

Risk Communication

**Accommodate the media
(media communication) to get
the right message across**

Cookie
Monster



Risk Communication

- 1. Get credible spokesperson**
- 2. Show that you care and LISTEN**
- 3. Know your facts, acknowledge uncertainties**
- 4. Acknowledge mistakes, Tell the truth, tell it fast and tell it all**
- 5. Do not be too technical, be clear as to what you are saying, DO NOT BS**
- 6. Offer solutions and things to do**
- 7. Golden rule**

Risk Communication

***Impose No More Risk than You
Would Tolerate Yourself
(Golden Rule)***

- **Consider yourself and your family**
- **The Golden Rule forces decision-makers to abandon their own value and detachment from their decisions so they may understand the perspectives of those affected**