



ERMA 200223 Hearing Hamilton 2010

Jon Carapiet and
Claire Bleakley

GE Free NZ in food and environment



Public expectations of Regulators

- **Sufficient information to make informed comment (not generic)**
- **Sufficient detail to understand what is being engineered**
- **Open mind when listening to public concerns**
- **Consideration of costs to public**
- **Right to have your submission heard**
- **Sensitivity to the public interest in a democracy**



Why we need to know the Organism?

- **To understand how to evaluate and manage any of its disease action**
- **To trace escape into environment**
 - **From Laboratory**
 - **From field**
 - **Inclement weather/Flood / Underground water**
 - **Community economics and health**
- **For scientific and public evaluation and assessment**
 - **Evaluate alternatives, ethical costs and benefits**
- **HSNO Act requirements on a case-by –case basis.**



Why an organism cannot be notified for the register after Hearing

No ability to have:

- **Scientific assessment or public evaluation of organism description**
*Section 40
*Section 11
- **Consideration of Alternative safer options**
*Section 44A.
- **Maori consultation**
- **Risks Cost and benefits**
- **Community and Health consideration**
- **Economic considerations**

***Section 45**

***HSNO Act 1996**



Is this possible?

- **Waikato farms have virulent unknown disease outbreak**
- **Close down of all surrounding farm operations**
- **Mass destruction of animals.**
- **Costs to rectify around \$30 million**
- **Unknown new disease threatens Biosecurity and halts exports**
- **Delay in isolating origin as no diagnostic tools**
- **Therefore, no ability to close down and act immediately to eliminate threat.**



Foot and Mouth Outbreak UK

- 16km down stream 2 farms in Surrey had Foot and Mouth outbreak.
- Close down of all farm operations in South of England and mass destruction of animals.
- Britain placed on high alert affecting all exports.
- Identified as 01BFS (1967) strain
(not known to be in circulation)
- Traced to Pirbright contained laboratory Facility.
(Institute of Animal Health, Meriel, Stabilitech Ltd).
- Costs to rectify around \$30NZ million



Escape 01BFS GE virus traced to

- Pirbright a contained laboratory.
- Breach of facility containment protocols,
- Virus improperly chemically inactivated.
- Cracks in drains and effluent sump
- Manhole overflow aerosol and surface water
- Virus release from overflow to lagoon
- Contaminated Soil removed off site
- Improper management of staff movements
- All hazards spread from exposure to soil, air and water.



Why is this relevant?

- Informed and scientific debate on risks and benefits to New Zealand community.
- Diagnostic tools to trace source of outbreak
- GE virus (FMD) pathology known
- Biosecurity risk contained to site
- Outdoor control of GEO must be known
- Close proximity to residential homes of Ruakura.
- Taxpayer and public are carrying liability and risk.



Foot and Mouth Disease

- Highly communicable viral disease
- Caused by *Aphthovirus*, family *Picornaviridae*, seven serotypes.
- 10 infectious particles to infect an animal.
- High Biosecurity threat,
- Affects cloven footed animals and deer.
- Transmission Route -Aerosol and effluent
- Human carriers in throat and nose –transmission routes.



Maori Consultation

1-2nd March 2010

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Summary of Key themes 2008

- *“We haven't had any discussion on the risks of this application”. (p.12)*
- *“I am unhappy the draft is not available now. It is unfair on iwi and hapu. The application would clarify things”*
- *“A big issue ...is a lack of prior information before the application is due”*
- *“Why is this consultation happening now without a copy of the application being available for us to see?” (p.18)*




Highly Improbable EVENTS E&R reports?

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How can a non-GM grower control floods?



seed and pods flow
from canola paddock





Increasing Catastrophic Weather conditions fueled by Global Warming



NZ Damage from storms 2004



Rot in MECH: BT

- The roots of the wilted Bt plants had symptoms of Rhizoctonia, root rot,
- ***The fungus is soil borne may infest the succeeding crops.***
- ***The fungus is also likely to spread through irrigation water to neighboring fields.***
- A new disease not seen until now
Qayum A. and Sakkhari K., (2007) Bt Cotton in Andhra Pradesh a three year assessment (Pg 30)



Rotting roots give rise to new fears

Rhizoctonia or Root Rot was a visible phenomenon in Bollgard crop, giving rise to fears that it must be spreading a new disease not seen until now



Compliance Breaches Highly Improbable

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Discovered Breach of flowering kale



Photograph
Steffan Browning

GM flowering Kale with fully developed seed pod - 22/12/08

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environment



Stem rot in GM Brassica.

7/03/08



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GE Cabbage and Cauli



Insect damage and
Bolting initiation
19/03/08

Evidence of non-
compliance, MAF
sloppy monitoring
and inspection.

08/04/08



1-2nd March 2010



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Main Trial period 2008 – Broccoli breach early 2008

"...no evidence [highly improbable] of the possibility that broccoli could produce open flowers before bolting of the plant commences".
ERMA decision 2.5.18, p.15.





The NZ Law Commission (2002) findings on GMO's

- **“It is difficult to estimate the level of risk posed by GMO's;**
- **It is difficult to assess the magnitude of the potential damage that could be caused;**
- **GMO's have the potential to create catastrophic levels of harm;**
- **GMO's have the potential to cause irreversible damage;**
- **Some of the potential negative effects of GMOs will likely manifest in the long term, be diffuse in nature”**



Field Tests GE Cattle herd 2000 - 2008



- Myelin Basic Protein MBP = 10
- Casein (plus) = 67
- Beta-Lacto-globulin(-) = 0
- LactoFerrin = 20
- Follicle Stimulat: Hormone = 5

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AgResearch Annual Report 2008 ERMA



Health problems in GE Cows

- **Sterility,**
 - Heterozygous animals conceived
 - Homozygous cows were sterile
- **Miscarriages/ slips**
 - Foetuses used to re-derive cell lines
- **Pregnancy problems, low % success rate**
 - Neospora caninum
- **Metabolic problems**
- **Liver abscess**
- **Gangrenous mastitis**
- **Respiratory problems**

AgResearch Annual Report 2008 ERMA



GM Calf term deaths

- **Internal organ problems.**
 - Un inflated lungs.
 - Lack of diaphragm.
 - No bladder.
 - Patent foramen ovale. (Hole in Heart)
 - Bladder and pericardia fused.
 - Ascites.
- **Deformities in limbs.**
 - Calf club foot and fused neck.
 - Rear fetlocks bent back.
 - Bilateral medial strip contracted.

AgResearch Annual Report 2000-08.



2007 Annual reports.

- **MBP - 6 NM (Naturally Mated) 5 live births.**
 - 1 Caesar section.
 - 1 Cow euthanased - severe gangrenous mastitis.
- **Casein+ - 19 (3 NM, 16 AI) 12 live births.**
 - 4 Heterozygous F1, F2 pregnant, 2 F3 Homozygous failed.
 - 1 Cow died post natal from metabolic problems.
- **hLF - 87ET (Embryo transfer). 16 live births.**
 - 1 still Born.
 - 3 dead at birth with deformities.
- **hFSH – 131 Embryos transferred 0 live births.**
 - 3 Foetuses aborted @ d 60 to re-derive cell lines.

Agresearch Annual report 2007



Failed GE Field Tests PPL Whakamaru



- **East Freisan, 150% birth, top milk producer.**
- **Anti-alpha Trypsin (hAAT) gene**
- **Fecundity low 5%, prone to disease and unexplained death.**
- **Clinical trials: Failed - Rec: hAAT isolate**
 - lung distress and severe wheezing.
- **3000 transgenic sheep incinerated,**
- **PPL went bankrupt sold IP to Pharming (NV).**





Summary results of GM cattle after 8 years?

- **Total failure to create some GM cell lines.**
- **< 2 % live birth for embryo transfer.**
- **F1-F2 generations have low conception.**
- **Unusual deformities**
 - Internal organs missing,
 - heart abnormalities
 - limbs imperfectly formed or fused together.
- **Started isolation and animal trials on MBP.**
- **Will Pharma milks need the same testing?**

AgResearch Annual Report 2000- 2008



References

- Final report on potential breaches of Biosecurity at the Pirbright site 2007. Health and Safety Executive.
- Comprehensive Annual reports to ERMA on GMF 98009 and GMD 02028, 2000-2008.