

FORECASTING NANO LAW:

Legal Implications of Nanotechnology Within Occupational medicine

A Survey of the Emerging Law
of Nanotechnology

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***Nanotechnology's
revolution for
commerce will
revolutionize public
health***

Goal

- To prepare occupational physicians and the allied professions in occupational medicine for nanotechnology and nanomedicine's forthcoming changes to workplace health:
 - measuring exposure,
 - (work, cumulative medical history,
 - Characterizing workplace health
- Treatment in the workplace for rehabilitation of disabled persons

I. What does nanotechnology foretell for occupational medicine

?

Nanotechnology will redefine:

- Industries
- Health --medicine-- public health
- The meaning of the terms
- « health » and « disability » .

As defined under law these terms will change because there will be new treatments, earlier detection, presymptomatic

- NOT COVERED BY EXISTING LAW

HOW BIG IS NANO?

pour les collectionneurs publiés

Collecte à répétition : chaque Nano a une personnalité unique. Tu les trouves dans les magasins, à l'école, à la bibliothèque, à la gare, chez tes amis... Tu les trouves partout ! Mais tu ne les trouves pas tous ! Alors, comment faire ? Réponds à nos questions et découvre les Nano. C'est ainsi que tu pourras les avoir tous !

La suite NanoMania : la suite NanoMania est là pour t'aider à trouver les Nano. C'est un jeu de cartes qui te permet de découvrir les Nano et de les collectionner. Tu pourras aussi découvrir les Nano et les collectionner. Tu pourras aussi découvrir les Nano et les collectionner.

nano mania

Découvre, empile et collectionne les Nanos.

MIGROS
la banque suisse

Le jeu de cartes NanoMania est disponible en vente libre dans les magasins Migros. Tu pourras aussi découvrir les Nano et les collectionner. Tu pourras aussi découvrir les Nano et les collectionner.

HOW BIG IS NANO?

Predicted to be 3 trillion US dollars
of US GDP
by 2015
(At current rates for currency)

NANO

- MANIA
- GROCERY STORE CHAIN CALLED
- "MIGROS" IN
- Switzerland gives out free TOYS called nano—
- what does the public think ?
- How does this common perception alter our society's view of nano risk?

nano-consumer products are

here!




Mercedes-Benz
Mercedes
CLS-class




Wilson Double
Core tennis balls




Eddie Bauer
Ruston Fit Nano-
Care khakis





3M Adper Single
Bond Plus
dental adhesive



Rapamune
no-suppress




Smith & Nephew Acticoat 7
antimicrobial wound dressing



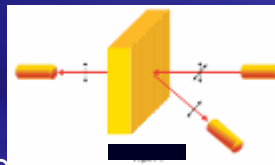

Kodak EasyShare
LS633 camera




Lauten Gallery washbasin
with Wondergliss



Samsung Nano
SilverSeal Refrigerator



NanoOpto subwavelength
polarizing beam splitter/combiner




Hummer H2

Defining the Issue

Nanotechnology and Risk

- **Nanotechnology - The Challenge**
 - Does the nature of engineered nanostructured materials and devices present new safety and health risks?
 - How can the benefits of nanotechnology be realized while proactively minimizing the potential risk?

Federal Office of Public Health FOPH
Federal Office for the Environment FOEN
Guidelines
on the
Precautionary Matrix for
Synthetic Nanomaterials
Version 1.0

Berne 2008.

Download PDF

<http://www.bag.admin.ch/themen/chemikalien/00228/00510/05626/index.html?lang=en>

IMPORTANT UNKNOWN AND UNQUANTIFIED PUBLIC HEALTH RISKS OF CONCERN

1. Present state of the art of nanotechnology works with dangerous stuff

Is it wise or fair to extend existing regulations of toxic substances that are known to be harmful **BELOW** the existing safe level – the so called « threshold value »?

Swiss National Science Foundation

“Physically confining materials at the nanoscale alters the behaviour (sic) of electrons within them, which in turn can change the way they conduct electricity and heat, and interact with electromagnetic radiation. Moreover, materials engineered at the nanoscale can enter into places that are inaccessible to larger materials,...

These behaviours (sic) also have potential consequences on the abilities of synthetic nanomaterials to cause harm in novel ways.

**Review and Comment NIOSH Current Intelligence
Bulletin: *Occupational Exposure to Carbon
Nanotubes and Nanofibers* [PDF - 804KB] Docket
Number NIOSH-161**

- **“LEGAL BASIS AND JUSTIFICATION:**
- **NIOSH RECOMMENDATIONS PREVENTING RISK FROM**
- **CARBON NANOTUBES AND NANOFIBERS”**
- **prepared in response to the question presented by NIOSH:**
- ***« Whether the hazard identification, risk estimation, and discussion of health effects for carbon nanotubes and nanofibers are a reasonable reflection of the current understanding of the evidence in the scientific literature »***
-

Royal Commission on Environmental Protection

- UK 2008 paragraph 1.37
- "As we have noted, history is replete with instances where such assumptions were shown to be flawed too late to avoid serious consequences. The second approach assumes that the state of the science is up to the job of detecting problems unambiguously and at an early enough stage to prevent widespread damage, which we have not found to be the case here.
- The third view would deny citizens and consumers the real lifestyle and health benefits that technologies based on novel materials might provide. In any case, we know that science can never definitively prove that something is safe"

SRU



German Advisory Council
on the Environment

The members of the Council are appointed by the German government for a four-year period.

Nanomaterials offer numerous new opportunities for innovation but they can also pose new risks.

- In its Special Report “Precautionary strategies for managing nanomaterials” the German Advisory Council on the Environment (SRU) makes recommendations for a responsible and precautionary development of this new technology.
- The objective is to allow for innovation but also to identify and reduce risks at an early stage

Organization for Economic Cooperation and Development



- Produces internationally agreed instruments, decisions and recommendations to promote rules of the game in areas where multilateral agreement is necessary for individual countries to make progress in a globalized economy (30 members, 70 observers).
- In November 2007 OECD Working Party on Manufactured Nanomaterials established a NIOSH-led project to raise awareness about- and harmonize approaches for- exposure

highly-paid EXPERTS
ALREADY AGREE --DEFINING
NANO
IS IMPORTANT

Defining Nano

« Don't Define NANO...

“Andrew Maynard argues against defining engineered nanomaterials for regulatory purposes (*Nature* 475, 31; July 2011)..

MUST define NANO:::

- (August 29 2011, Herman Stamm wrote):
- **But such a definition is urgently needed, especially for particulate nanomaterials... »**

2 approaches

- Lists are great for £\$ expert meetings, need to revise the list periodically
- Make sure everything important is on the list
- Criteria
- Flexible
- Can be interpreted to meet new needs
- Can include components that are not easily put into a list

Make sure outdated problems are off the list

WHAT QUESTIONS?

- 1. NANO definitions
- What is nanotechnology?
- What is a nanoparticle?
- (ethically or under law, for the purposes of applying a community standard fo action or care
- For the purposes of applying that standard in face of risk

II. ESTABLISHING REGULATIONS

WHAT
LAW?

WHO
NEEDS
LAW ?

LAW CAN CHANGE

Courts re-interpret old laws

Legislatures make new laws with
the stroke of the legislative pen

EXAMPLE OF LEGISLATIVE CHANGE

**IT WAS OK TO FIRE
PEOPLE WHO ARE SICK**

Taking the legislative pen in
hand-



**The next day it is ILLEGAL
not to hire them!**

- Americans With Disabilities Act (ADA), following the Individuals With Disabilities Education Act (IDEA), and a host of state and local human relations laws prohibiting discrimination law now requires equal opportunity !

What text?

Who do you
include in legal
protections?

*Where to draw the
line to exclude so
that one law does
not swallow
everything?*

- DEFINING NANO

WHAT QUESTIONS?

■ How

- Does society strike the balance
- Liability or immunity?
- Stakeholders
- Civil society and consumers?

WHAT QUESTIONS?

- 2. Should there be strict liability for
 - using nanomaterials?
 - To prevent harm to human health?
 - Impact on global burden of disease

WHAT QUESTIONS?

- 3. Is worker health
 - consistent with
 - Or
 - competing with
- Environmental protection?

WHAT QUESTIONS?

- 4. What Is the proper role of government?
 - local
 - national
 - Or
 - international
- Promoting and protecting R&D in nanobusiness
- Or Consumer Health and Environmental protection?

WHAT
LAW?

WHO
NEEDS
LAW
?

Health

is a

HUMAN RIGHT

Or
is
it
?

HUMAN RIGHTS ARE NOT FOR EVERYONE

- WHAT ABOUT PEOPLE WHO ARE NOT HEALTHY WHEN THEY ARE BORN
- OR NOT WEALTHY WHEN THEY ARE BORN?
- Or are not from the proper race class or ethnicity?

Nanomedicine

social transformations will re-define key social constructs

"health" and "disability".

- transition from an individual, medical perspective to a structural, social perspective .. shift from a “medical model” to a “social model” in which people are viewed as being disabled by society rather than by their bodies



POSSIBLE IMPACTS OF
NANOMEDICINE

Aging workforce

Disabled
populations who are
integrated into the
workforce

Aging workers who
have rehabilitation
and return to work

CO-MORBIDITY
REDEFINITION
OF HEALTH

- Cancer
- Alzheimers
- Parkinsons
- Bone regeneration



KEY CHRONIC
ILLNESSES will change:

Areas to watch:

Public health funding for people using
nanomedicines

Environmental

Cumulative Impact on human health

Food and Drug (medical devices)

Occupational health

Informed Consent regarding new technologies

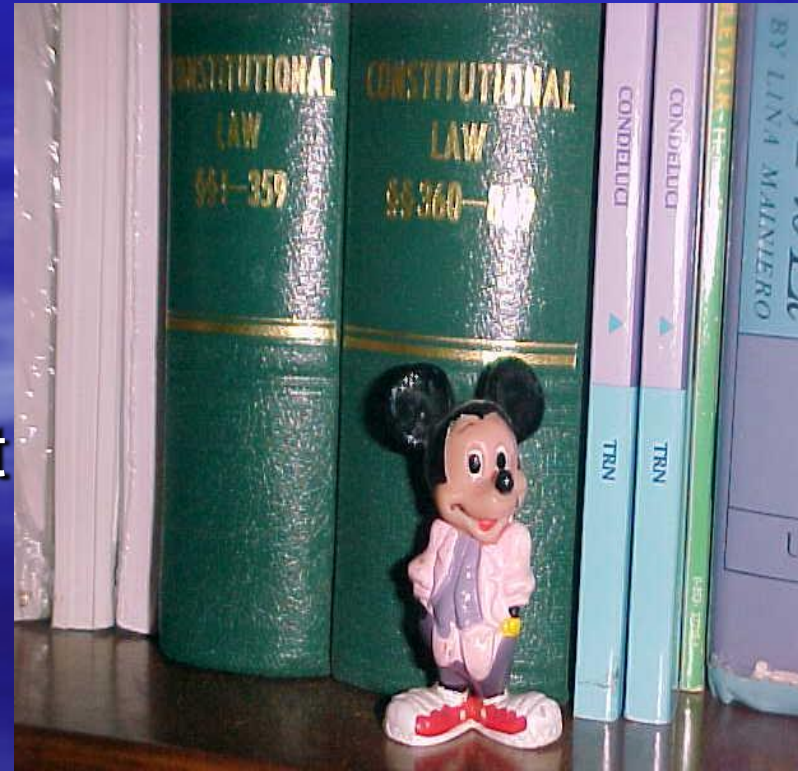
people in ill-health!!!

Conclusion

***Nanotechnology's
revolution for
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revolutionize public
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Conclusions

1. Laws can foster and incubate NEW industries while monitoring the situation through funding and incentive systems, to control emerging risks
2. Be clear in your goals about the scope and definitions in new laws
3. Think through existing drafts
4. Forethought beats afterthought



THANK YOU!!!

Merci grazie gracias
toda riba spasiba
efkadisto Motshakkeram

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BRINGING HEALTH TO WORK

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