

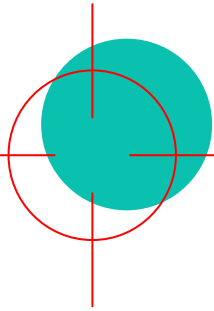
Nanotechnologie – Chancen und Risiken Eine Herausforderung für den Arbeitsschutz

KKL Luzern, 4th and 5th of October, 2010

André GAZSÓ
Institute of Technology
Assessment
Austrian Academy of
Sciences

A-1030 Vienna, Strohgasse 45/3
Tel.: +43-1-51581-6578
Fax: +43-1-710 98 83
agazso@oeaw.ac.at
www.nanotrust.ac.at

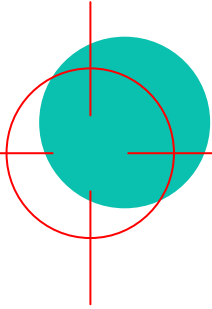




Overview

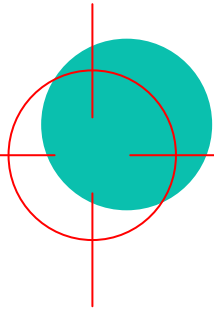
1. Introduction
 1. Risk Governance
 2. Nanotechnology – challenges
2. NT risk governance
3. Development
4. Nanotrust (Austria)
5. Conclusions





1

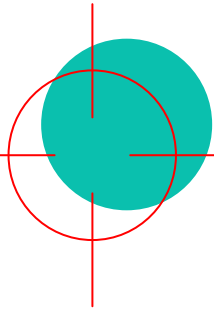




General situation

- Trends in public opinion towards nanotechnology
 - high expectations (esp. medical sector)
 - moderate concerns (esp. food sector)
 - low knowledge
- rather unstable situation
- public attitudes informed by emotion rather than knowledge
- earlier technology choice debates (?)

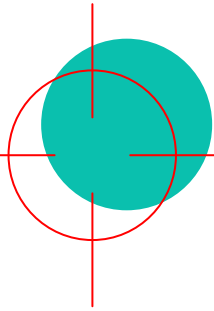




Risk governance

- **Risk** = possible unintended (unwanted, adverse) consequences of human activities (decisions) – potential damage and probability of occurrence
- **Governance** = socio-political interaction of players (important actors, i.e. decision makers, science, industry, economy, civil society, ...)
- **Risk governance** =
 - management of uncertainty related activities by society itself and
 - implementation of a new technology in a sustainable way (public acceptance)

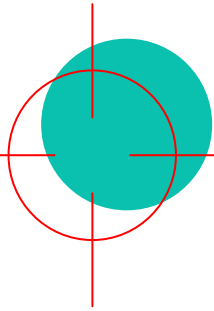




NT challenges 1 – lack of clarity

- No generally accepted definition of NT – the use of several definitions is confusing
- NT is an enabling technology – lot of conceivable applications
- Huge variety of development stages
- NT is genuinely interdisciplinary research

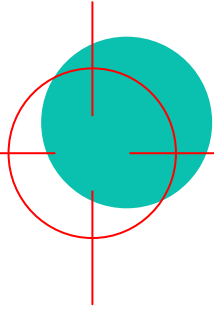




NT challenges 2 – risk knowledge gap

- High expectations raise a lot of questions whereas answers are rare, so far
- Research on NT is funded by considerable amount of money
- Discrepancy between knowledge on risks and the state of development

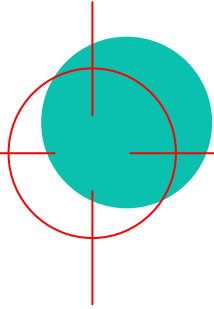




NT challenges 3 – products

- Increasing number of consumer products on the market
 - Practically no reliable information
 - Dependancy on information given by producers
 - No or unclear regulation for the time being
- Increasing uncertainty

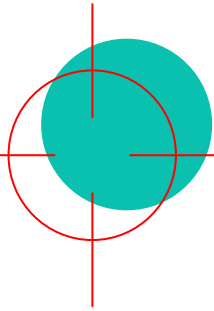




NT challenges 4 – information vs. regulation

- Very diverse and dispersed research in unintended consequences (EHS/ELSI), not enough data available for risk assessment
- Increasing demand for safety regulations – increasing public pressure on regulators
- Vicious circle: no data – no regulation – no credibility
- Establish an independent risk research programme

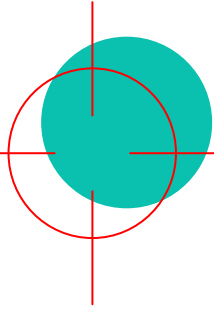




NT challenges 5 – usable information

- Increasing demand of information, public interest (parliamentary enquiries, media requests, private persons)
- A lot of activities on impact assessment and risk management concerning NT are already performed in the EU and MS and elsewhere
- ➔ Main necessity (and certain shortcoming) = Collection, appropriate treatment and dissemination of available knowledge





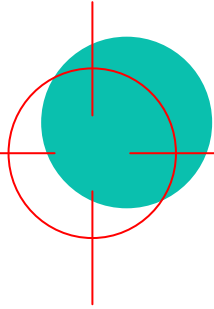
NT challenges – basic conflict

- Uncertain scientific knowledge
- Demand for tight regulation

Decision under uncertainty

(„post normal science“ – Funtowicz/Ravetz)



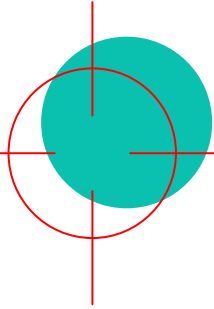


Post normal science

hard scientific facts

soft political decisions



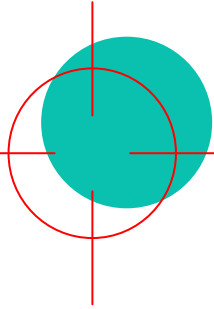


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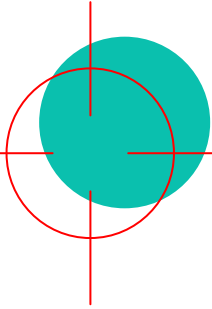




NT challenges – basic answer

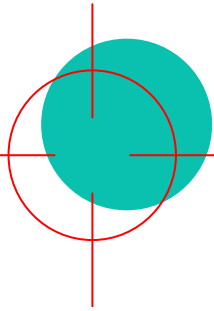
Precautionary Principle





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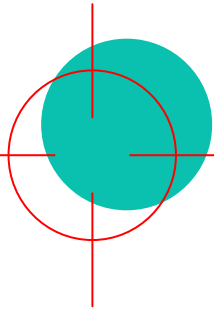




NT safety - timeline

- ~2000 NSF reports (USA)
- 2003 TAB-report (D)
- 2004 EU strategy
- 2005 EU action plan
- 2006 Publifocus (CH), Action Plan (D)
- 2007 Research Strategy (D)
- 2008 Action Plan (CH)
- 2010 Action Plan (A)



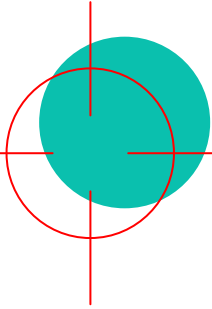


EU Action Plan

"Nanosciences and nanotechnologies: An action plan for Europe 2005-2009" (COM(2005) 243)

- ... defines a series ... actions for the immediate implementation of a **safe, integrated and responsible strategy** for nanosciences and nanotechnologies

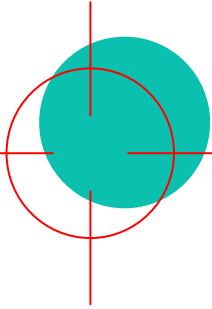




Actions: Integrating the societal dimension (3.5.2)

5. Highlighting the need to devote **due attention** to the **societal aspects** of nanotechnology, the Commission:
 - (a) calls upon Member States to pursue an open and proactive approach to governance in nanotechnology R&D to **ensure public awareness** and confidence;
 - (b) encourages a **dialogue with EU citizens/consumers** to promote informed judgement on nanotechnology R&D based on impartial information and the exchange of ideas;
 - (c) reaffirms its **commitment to ethical principles** in order to ensure that R&D in nanotechnology is carried out in a responsible and transparent manner.

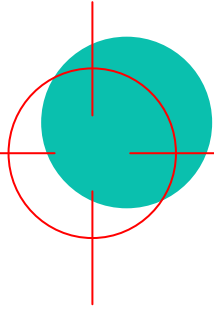




Actions: Public health, safety, environmental and consumer protection

6. In support of a high level of public health, safety, environmental and consumer protection, the Commission highlights the need:
 - (a) to **identify and address safety concerns** (real or perceived) at the earliest possible stage;
 - (b) to reinforce support for the **integration of health, environmental, risk and other related aspects into R&D activities** together with specific studies;
 - (c) to support the **generation of data on toxicology** and ecotoxicology (including dose response data) and evaluate potential human and environmental exposure.

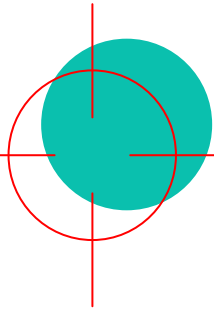




Actions: Public health, safety, environmental and consumer protection

6. The Commission calls upon the Member States to promote:
 - (d) the adjustment, if necessary, of **risk assessment procedures** to take into account the particular issues associated with nanotechnology applications;
 - (e) the integration of assessment of risk to human health, the environment, consumers and workers at all stages of the **life cycle** of the technology (including conception, R&D, manufacturing, distribution, use, and disposal).

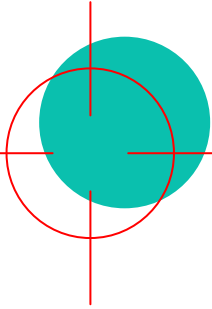




3 principles in AP

- Transparent communication and public dialogue
- Independent risk and safety research
- Integration on international level

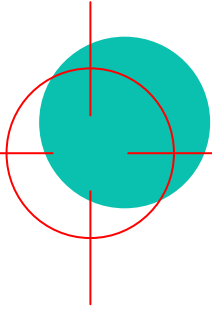




1 Information / Kommunikation

- Die Bundesregierung wird Chancen, aber auch mögliche Risiken über eine Informationsinitiative und gesellschaftlichen Dialog mit der Öffentlichkeit diskutieren. (D)
- Dem öffentlichen Dialog über Chancen und Risiken wird zentrale Bedeutung gegeben bei der Auseinandersetzung mit diesen neuen Technologien. (CH)



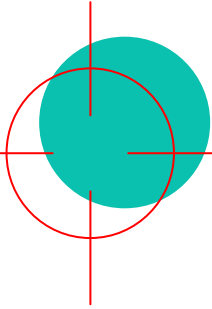


2

Unabhängige Forschung

- zur Schaffung von wissenschaftlichen und methodischen Voraussetzungen für die Vermeidung möglicher schädlicher Auswirkungen sollte die Förderung einer **unabhängigen Risikoforschung** verstärkt werden (CH).
- Die gesamte Bundesregierung wird - unter Koordination der Bundesoberbehörden BauA, UBA und BfR - eine gemeinsame Forschungsstrategie entwickeln (D)

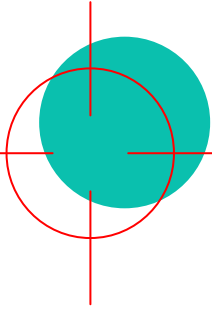




3 Internationalisierung

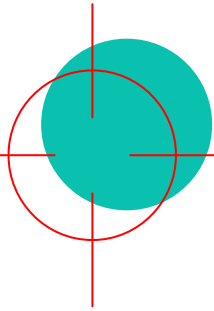
- zur Terminologie, zu Normen, Mess- und Prüfmethoden ist die Mitarbeit bei laufenden Programmen der OECD und der ISO wichtig (CH).
- Mitarbeit in den entsprechend OECD-Gremien und dem IRGC (International Risk Governance Council) zu verstärken
- Förderung der Forschung im Bereich Gesundheit, Konsumenten- und Arbeitnehmerschutz (EU).
- Stärkung der internationalen Zusammenarbeit (A)





3

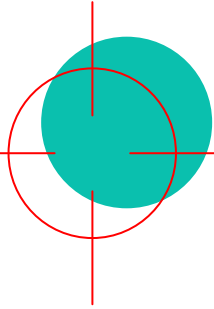




Vorsorgeprinzip

- Ein Rückgriff auf das Vorsorgeprinzip setzt voraus, dass bei einem Phänomen, Produkt oder Verfahren **mit dem Eintritt gefährlicher Folgen gerechnet werden muß**
- und dass sich das Risiko durch eine wissenschaftliche Bewertung **nicht mit hinreichender Sicherheit bestimmen läßt.**

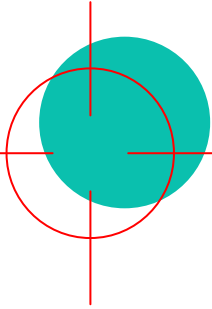




Vorsorgeprinzip

- Das Verfahren der Entscheidungsfindung sollte **transparent** sein und **alle Betroffenen** so früh wie möglich und in dem Umfang **einbeziehen**, in dem dies vernünftigerweise möglich ist.



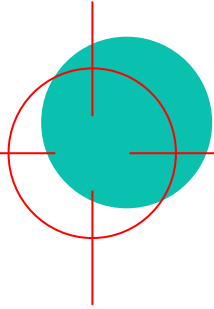


Precautionary Principle

COM 2000 (1)

- Management of uncertainty
- Opens political range and new possibilities
- Contributes to new solutions for tedious conflicts
- Capacity to decide and to act
- Integrates new relevant knowledge

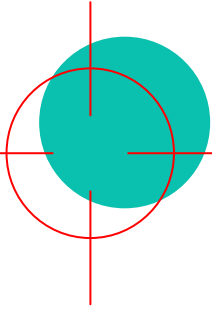




Precautionary Principle - Examples

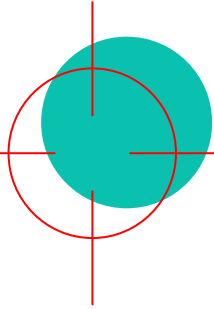
- Hard and soft law
- EHS research programmes and projects
- Networks and priority setting
- Action plans (political will) and followers
- Internationalisation (EU, Behördendialog)
- Dialogue processes (stakeholder, information, participative)
- Processing and distribution of structured knowledge





4

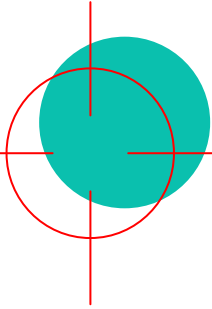




Situation in Austria – General political background

- Small country
- High social security level – political value
- tight regulation regarding safety
- conservative, but no negative attitudes against technology in general
- attentive observer of new trends („let’s have a look – then we will see“)
- Past controversies over chemicals, nuclear power, agricultural biotechnology (high hazard potential)
- No controversy over computers, cell phones, medical biotechnology (high expected individual benefit)

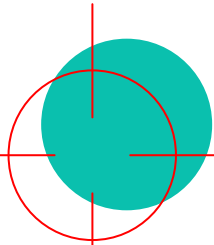




NanoTrust – basic data

- funded by the Ministry of Transportation, Innovation and Technology (BMVIT)
- Term of contract: 3 + 2,5 years (10/2007 – 4/2013)
- Interdisciplinary team
 - 3 full term scientists + 1 project leader
 - physics, cell biology/toxicology, philosophy/risk research, technology assessment
 - external contractors
- international advisory board – strategic matters
- Internal project advisory board – scientific matters

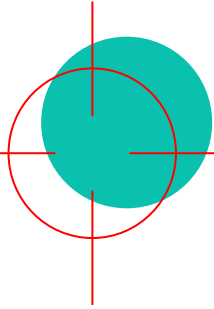




NanoTrust - Aims

- **risk radar:** to continually survey, analyse and summarise the state of knowledge regarding potential health and environmental risks of nanotechnology
- **clearing house** and **point of information** on questions of potential environmental and health risks (public bibliographic database, FAQ, dossiers on hot topics, link list, ...)
- **promoter of discussion:** workshops, networking (target groups: general public, administration and research community)

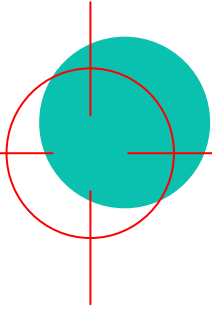




Observatory

- observe and assess
 - technological developments, aspired applications and products in the field of NT
 - activities of regulation on national and international level
 - aims and activities of involved stakeholders
 - discussion about NT in the media and in the scientific community





Dissemination

- **events**
- **publications**
- **network activities** (national, international)
- **web-site** (nanotrust.ac.at)





- Short summaries (4-6 pages, online) of the recent state of knowledge for specific topics
- high information demand, repeatedly emerging, controversial
- **Target audience:** political decision makers, regulators, research, science journalists, interested „public“



[glossar](#)

[fragen zu nano](#)

[veranstaltungen](#)

[kontakt](#)

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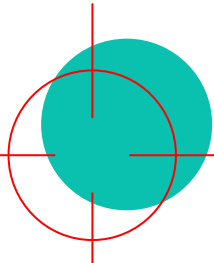
[english version](#)

Folgende Dossiers sind bereits erschienen:

- [020 Selbstreinigende, schmutz- und wasserabweisende Beschichtungen auf Basis von Nanotechnologie](#)
- [019 Nano-Regulierung in Österreich \(II\): ArbeitnehmerInnenschutz, Anlagen- und Umweltrecht](#)
- [018 Nano-Regulierung in Österreich \(I\): Stoff- und Produktrecht](#)
- [017 Nano-Regulierung in der Europäischen Union](#)
- [016 Industrielle Selbstverpflichtungen und freiwillige Maßnahmen im Umgang mit Nanomaterialien](#)
- [015 Nano-Textilien](#)
- [014 Können Nanopartikel in das Gehirn gelangen?](#)
- [013 Diskussion um den Anteil der Begleitforschung im US-amerikanischen Forschungsprogramm zur Nanotechnologie](#)
- [012 Nanopartikel, Freie Radikale und Oxidativer Stress](#)
- [011 Was ist eigentlich Begleitforschung zur Nanotechnologie?](#)
- [010 Nanosilber](#)
- [009 Nano-Konsumprodukte in Österreich](#)
- [008 Nanotechnologie in Kosmetika](#)
- [007 Einfluss von Nanopartikeln auf zelluläre Funktionen](#)
- [006 Herstellungsverfahren von Nanopartikeln und Nanomaterialien](#)
- [005 Umwelt- und Gesundheitsauswirkungen von Nanopartikeln - EU-Projekte im 6. RP](#)
- [004 Nanopartikel und nanostrukturierte Materialien in der Lebensmittelindustrie](#)
- [003 Wie kommen Nanopartikel in den menschlichen Körper und was verursachen sie dort?](#)
- [002 Was sind synthetische Nanopartikel?](#)
- [001 Zur Definition der Nanotechnologie](#)



Die Dossiers gibt es auch [gesammelt](#) in einem Dokument (5,2 MB!): [download](#)



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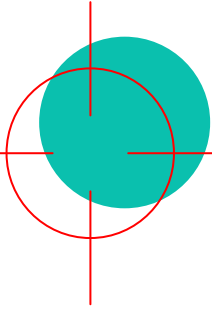
Events

Annual workshop

<http://nanotrust.ac.at/nano.ita.en/veranstaltung.html>

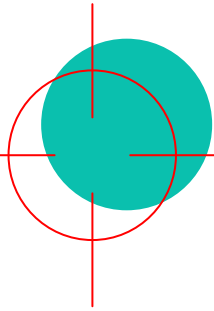
- *4th WS (23th Sept. 2010) on risk management*
- OECD-WPN policy roundtable on nanorisk policy (25th September 2009)
- 1st WS (25th September 2007)
„Risk Governance of Nanotechnologies: The International State-of-the-Art”
- 2nd WS (29th September 2008)
“Nanotechnologies: The Present State of Regulation” → nanotrust.ac.at/nano08
- 3rd WS (24th September 2009) on EHS research
- **Target groups:**
regulators, ministries, scientists, NGOs, other interest groups





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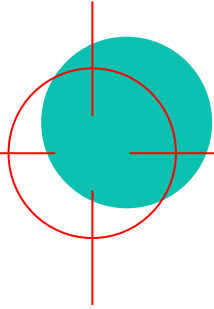




Conclusions 1

- Risk governance is an attempt
 - to learn from experiences
 - to establish structures to adequately address risks and benefits of a new technology
- Status quo in Austria:
 - Increasing risk awareness of regulators (food safety, worker safety)
 - Increasing network activities, some networks are converging and/or changing their initial goals – national action plan on NT

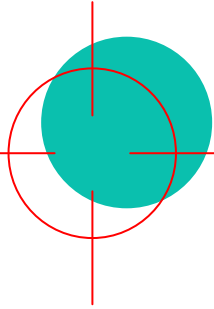




Conclusions 2

- Establish a position of trust (competence, reliability, transparency, representation)
- Include as many actors as early as possible and
- Continue dialogue with all players in the public debate
- Establish strong partner networks
- Raise awareness on EHS/ELSI topics in decision makers (multipliers)
- Establish independent risk and safety research





nano trust

Thank you for your attention!

Homepage:

<http://nanotrust.ac.at>

Team:

Dr. Ulrich Fiedeler

(+43 (1)) 51581 -

- 6577

Dr. André Gazsó

- 6578

Doz. Michael Nentwich

- 6583

Prof. Myrtill Simkó

- 6579

Mag. Julia Haslinger

Dr. René Fries, Mag. Sabine Gressler

Contact:

agazso@oeaw.ac.at

nano.ita@oeaw.ac.at

