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Pharmaceutical residues in the water cycle: challenges of communicating an ‚uncertain risk‘ to the public

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Session „Research on communication and communication of research – pinpointing the best practice to improve our outreach“
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Research context and concern

- + Problem: **human pharmaceuticals in the water cycle** following incomplete removal in wastewater treatment: proven environmental risk of some substances; several concerns
- + Project Sauber+: wastewater from **healthcare institutions**
- + One assumption: **Pharmaceutical users** can contribute to reducing input of pharmaceuticals: proper disposal, sound use
- + Task: Generation of **risk communication** material that motivates to make this contribution

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2

Research question (RC)

In order to pursue the aims of:

- + sensitization
- + information
- + behavior adaptation

how should risk communication be designed
in terms of content?

Little knowledge about:

- + actual risks for environment and human health
- + people's perception of the issue



3

Research approach (RC)

- + Literature study: requirements for RC on pharmaceutical residues in the water cycle?
 - risk perception research: intuitive risk perception?
 - attitude research: motivation/ability for information processing?
- + Generation of RC material
- + Effectiveness check of RC material (via focus groups)



4

Insights risk perception

+ risk source „pharmaceuticals in the water cycle“ has attributes that induce people to perceive a risk as **negligible** as well as attributes which promote the perception that a risk is **high**

➤ perception of risk severity is likely to **differ** between persons/pharmaceutical users

+ attributes with „risk is high-effect“: resemble risk perception pattern „**risk as an early indication of insidious danger**“



5

Qualitative risk factors

Risk is low-effect	Risk is high-effect
Positive risk-benefit balance	Involuntary risk exposure
Fair distribution of risks and benefits	Lack of personal control
Assigning blame to others hardly possible	Current level of knowledge characterized by considerable uncertainty and areas of non-knowledge
Familiarity with risk source	Relatively high degree of dread: risk is ubiquitous and cannot be perceived with the human senses; real and hypothetical damages with symbolic power
Personal involvement	

„Risk as an indicator of insidious danger“
(Renn 1989; 2004; 2008)



6

Insidious danger

„The problem: It is difficult to prove what exact role the **chemical cocktail** in the water plays. However, there are indications, **indications of creeping changes**. There are studies that indicate that hormonally effective substances in drinking water may be causally linked with the **increase in male infertility**. Also can the metabolic function of the thyroid be adversely affected. Therefore, other researchers believe that the growing number of **overweight** individuals and **diabetics** could possibly be linked to the chemical mix of the water coming out of the pipes. Also neurological disorders such as **ADHS** could be due to the chronic intake of traces of chemicals“ (announcement of German TV documentary, planet e. 2013; own translation, emphasis added).



7

Addressing intuitive risk perception

- + make explicit the unquestioned benefit of pharmaceuticals: **health as a shared value**
- + differentiate clearly between what is known and what is uncertain or not known, and specify how relevant actors respond to the state of knowledge: **references to efforts at risk/precaution-based governance**
- + consider the **affect-inducing potential** of RC formats and content particularly in relation to drinking water
- + give clear instructions on how to dispose of unused pharmaceuticals: **empowerment / opportunity for low-threshold individual action**



8

Insights attitude research (ELM)

Motivation to process information/message?

- no direct relevance of environmental effects for the individual
- low level of personal responsibility
- risk attributes with a risk is low-effect may be crucial for individual risk perception

Ability to process/reflect on information?

- low awareness
- complex cause-effect relationships
- extremely low contaminant concentrations
- high level of uncertainty and lack of knowledge



9

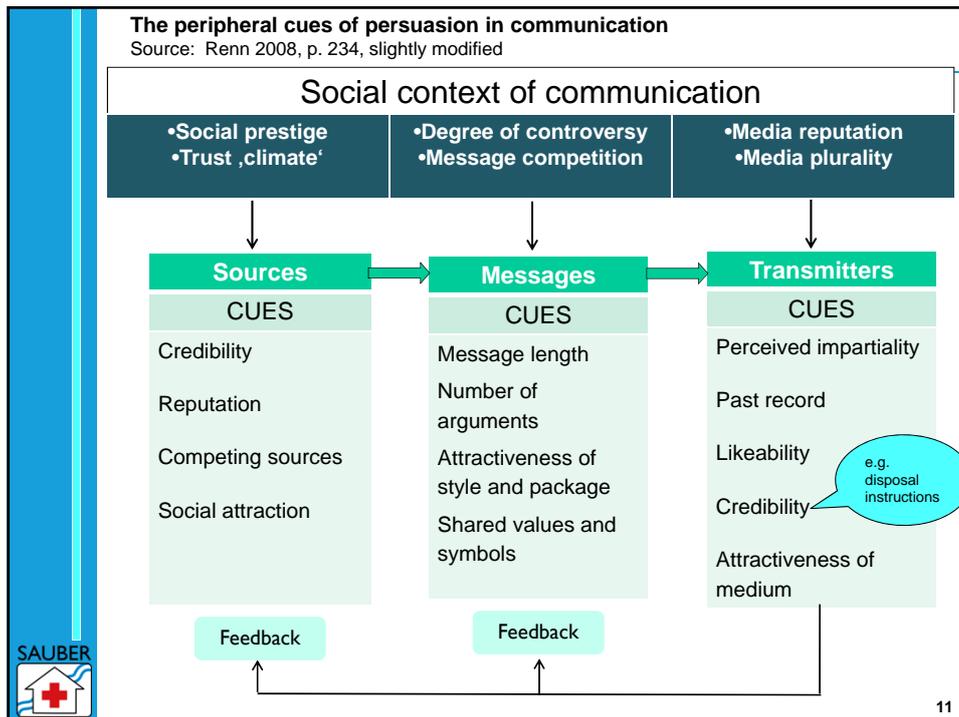
Addressing low motivation – low ability

If RC is influential at all, it will be by **simple associative and cue processes** (the 'peripheral route', Petty & Cacioppo 1986) and not by analysis of the information as arguments

- **Cues and heuristics** require careful consideration in generation and evaluation of RC on pharmaceuticals in the water cycle



10



Possible ways of intentional use of cues

Sources:

- + Credibility: Environment and health authorities
- + Consistent and consensual information: e.g. in relation to „proper disposal“

Messages:

- + Attractive style via emotional cues; e.g. visualisation of „brave perch“ or „feminized fish“; cp. „The Drugs We Wash Away: Pharmaceuticals, Drinking Water and the Environment“, PHARMAS-EU project
- + Shared values: health as a most valuable good; no over-valuing of environmental protection

Transmitters:

- + Pictograms/pictures on „proper/improper disposal“ by credible transmitters (pharmacists, doctors, consumer protection organizations etc.) - behavioral adjustment as „short-cut“

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12

Conclusions I

- + RC requires **balancing between awakening and reassuring**; main message: it's worth taking precautionary measures.
- + The broader frame of „**dealing responsibly with pharmaceuticals: protects your health and the environment**“ could serve as an attention cue because it enhances the relevance for the target group.
- + Clear differentiation between what is known and what is not known or uncertain and references to risk/precaution-based governance are particularly important because of the presumed importance of the risk perception pattern „**risk as an indicator of insidious danger**“.



13

Conclusions II

- + Special attention should be paid to the issue's **emotional mobilisation potential** (water as the elixir of life; purity of drinking water; high benefit of pharmaceuticals).
- + **Cues of persuasion** with affect-inducing power and cues generally require careful consideration because motivation and ability for information processing are likely to be low in significant parts of the public.



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14

➔ Thank you for your attention

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