6th International Symposium on

Ethics of Environmental Health

České Budějovice, 8 – 11 September 2024

Programme & Abstracts

6th International Symposium on

Ethics of Environmental Health

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Sponsored by

Jihočeská univerzita
v Českých Budějovicích
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Consulta CB

Environmental health encompasses the assessment and control of factors external to the human body that can potentially affect health. Such factors include radiation, synthetic chemicals, and other hazardous agents. The ethical frameworks that underly environmental health research and practice, providing for rational regulatory frameworks, are not always made explicit and require continual updating and attention as technological, social, and legislative norms evolve.

We look forward to the contributions of colleagues from the whole range of environmental health research and practice to this theme. Their focus will be on the ethical implications of science and technology as they impinge on the application of research findings in the regulatory and policy domains.

The 6th International Symposium on the Ethics of Environmental Health will be held in conjunction with a workshop on "Ethics of Environmental Health in Armed Conflict Situations," which is organised as part of RRADEW ("Resilience to RADiological Events in Wartime"), a project supported by PIANOFORTE ("European Partnership for Radiation Protection Research.") Co-sponsors will be SHARE (a European Network for "Social Sciences and Humanities in ionising radiation REsearch") and the University of South Bohemia.

PROGRAMME

Sunday, September 8, 2024

18:00 – 18:30	Registration
18:30 – 19:30	Barbecue
19:30 – 19:45	Opening
19:45 – 20:30	European Diplomacy and Humanism as a Context for Science: Disappointing experiences and hope from unexpected sources *Philip McDonagh, Dublin, Ireland*

Monday, September 9, 2024

9:00 – 9:45	The Social, Legal, and Scientific Context for Ethical Conduct in Public Health Research and Practice *Colin Soskolne, Edmonton and Montreal, Canada*
9:45– 10:30	From FAIR to CARE *Deborah Oughton, Ås, Norway*
10:30 – 11:00	Coffee Break
11:00 – 11:30	Post-disaster Ethics: Some Current Challenges Facing Fukushima Residents *Jacques Lochard, Nagasaki, Japan*
11:30 – 12:00	The Only Thing We Have To Fear Is The Fear of Radiation Itself? From a Psychological to Economic Framing of Science Communication After Nuclear Disasters *Makoto Takahashi, Amsterdam, The Netherlands*

12:00 – 12:30	Radiophobia and Mysticism: Ukrainians' Perception of the Chornobyl Disaster Through Art *Oksana Semenik, Kyjiv, Ukraine*
12:30 – 13:30	Lunch
13:30 – 14:00	Artistic Expression or Nuclear Inspiration: Some Reflections on the Artwork at the IAEA Building in Vienna *Jim Malone, Dublin, Ireland*
14:00 – 14:30	Technology and Environmental Health: Mediation Theory and Its Application *Daniel Novotný, České Budějovice, Czech Republic*
14:30 – 15:00	Engineering Ethics Education Seen through an Ethics of Environmental Health Lens *Tom Børsen, Aalborg, Denmark*
15:00 - 15:30	Coffee Break
15:30 – 16:00	Empowering Collaborative Governance Through Open Nuclear Waste Dialogue *Nicole Martinez, Clemson, USA*
16:00 – 16:30	Social Vulnerability Assessment in the Vicinity of Hazardous Material Sites, Chemical Parks, and Nuclear Power Plants *Alexander Fekete, Cologne, Germany*
16:30 – 17:00	Environmental Health in Social Work *Jitka Vacková, České Budějovice, Czech Republic*
17:30	Excursion, including dinner

Tuesday, September 10, 2024

9:00 – 9:30	The RRADEW Project – An Overview *Pascal Croüail, Fontenay-aux-Roses, France*
9:30 – 10:00	Scenarios of Accidents at Nuclear Facilities During Wartime *Olena Pareniuk, Kyiv, Ukraine*
10:00 – 10:30	A Pacifist Look at the Ethical Challenges of an Armed Conflict Situation *Gaston Meskens, Mol, Belgium*
10:30 – 11:00	Coffee Break
11:00 – 11:30	How are Protection Measures Implemented after Nuclear Disasters? *Olena Pareniuk, Kyiv, Ukraine*
11:30 - 12:00	Challenges for the Application of the Ethical Values of the Radiological Protection System in the Context of War or Armed Conflict *Thierry Schneider, Fontenay-aux-Roses, France*
12:00 - 12:30	Societal Resilience and Democracy in Central European Countries *Salim Murad, České Budějovice, Czech Republic*
12:30 – 13:30	Lunch
13:30 – 14:00	Resilience to Radiation Emergencies in War or Armed Conflicts: Navigating the Ethical Issues *Yevgeniya Tomkiv, As, Norway*
14:00 – 15:30	Small Group Discussions on Aspects of "Resilience" *Coordinated by Yevgeniya Tomkiv, As, Norway*

15:30 – 16:00 Coffee Break

16:00 – 16:30 Operational Choices for First Responders in Doubtful Situation
Denis Giordan, Aix-en-Provence, France

16:30 – 17:00 Ethical Dilemmas at Fukushima Daiichi Nuclear Power Plant
Elsa Gisquet, Fontenay-aux-Roses, France

17:00 – 17:30 Environmental Contributions to Common Chronic Diseases and its Exacerbation in Armed Conflict Situations
Carl Cranor, Riverside, USA

18:00 Dinner

Wednesday, September 11, 2024

9:00 – 9:30 Value Incommensurabilities and Incomparabilities regarding Health and Environment in Armed Conflicts
Friedo Zölzer, České Budějovice, Czech Republic

9:30 – 10:00 Psychological, Educational, and Ethical Approaches in Conflict Situations
Liudmila Liutsko, Barcelona, Spain

10:00 – 10:30 Ethical Aspects of Science Popularization During Wars and Crises: Challenges and Opportunities
Kateryna Shavanova, Kyiv, Ukraine

10:30 – 11:00 Coffee Break

11:00 – 12:30 Round Table Discussion About Further Work on Ethics of Environmental Health in Armed Conflict Situations

12:30 Closing / Lunch

ABSTRACTS

European Diplomacy and Humanism as a Context for Science: Disappointing Experiences and Hope from Unexpected Sources

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Two new words are much used. In a *polycrisis,* different trends reinforce one another in a cascade that does not seem amenable to analysis and forecasting. A *hyperproblem* is a problem that stands above all other problems and prevents us from addressing them properly. The world is suffering from *a polycrisis;* we are failing either to keep the peace or to map and manage the profound currents of change in which planetary survival is at stake. Our *hyperproblem* is that we have no clear idea about the interventions that would revive politics – politics in the sense of *le politique*, the dynamics of life in society; as opposed to *la politique*, the day-to-day issues that dominate the electoral cycle.

My paper argues for a revival of politics at two levels. At a theoretical level, I base myself on the Islamic thinker Avicenna who develops the enabling idea that the *potentiality* of any situation is always different and more far-reaching than what is immediately 'possible' (cf. Dietrich Bonhoeffer on a 'future not visible in the alternatives of the present'). This understanding of potentiality is a source of hope. It means that steps we take now in the realm of orientation and methodology can prepare the way for future change. Drawing on our co-authored book *On the Significance of Religion for Global Diplomacy* (Routledge 2021), I will outline six 'axioms of the historical imagination' through which we can begin to promote an effective public truth at the global level. I describe this as a project for a 'new global humanism' and a '21st century Axial Age.' Part of the crisis of modernity, I will argue, is that we have lost touch with the scope of reason in Greek and Roman political theory, especially in relation to violence as a factor in human society (the so-called 'just war' derived from a shallow reading of Cicero's *De Officiis*) and ways of understanding the world that depend on our mutual co-presence and our ability to communicate and make decisions (a shared life as the condition of verbal meaning, as in Thucydides).

At the practical level, my paper argues that much of what happens in international relations today can be categorised as 'positivist' diplomacy. By this I mean that underlying assumptions about high-level values and the nature of human progress have taken shape unconsciously and/or are placed beyond the reach of rational argument. I will draw on my experience of negotiations in Europe and Ireland/UK (Helsinki Final Act, European Union, Good Friday/Belfast Agreement) to argue for new forms of long-term, multi-stakeholder diplomacy through which to overcome 'existential mistrust' (Martin Buber) and restore the interaction of persons as the key to peacebuilding. (In such a scenario, day-to-day negotiations on specific subjects will continue as before.)

My paper offers a concrete proposal. The Conference on Security and Cooperation in Europe (CSCE) was a process, not a once-off event. The leaders of states in western and eastern Europe, as well as the United States and Canada, pledged to 'cooperate in the

interest of mankind.' The ten principles of the Helsinki Final Act are a matrix through which to navigate complex questions of territorial integrity, self-determination, practical cooperation across lines of division, non-interference, sovereign equality, peaceful mediation, and so on. The three 'baskets' of the CSCE set out a regional work program corresponding to the three main work streams at the UN: security, development, and human rights. The overall goal was to render conflict redundant. At some point in the 19th century, it became unthinkable for Denmark and Sweden, or the US and Canada, to fight wars. In the second half of the 20th century, war became unthinkable for France and Germany. Rapprochement in Europe under the Helsinki Final Act was meant to change habits and assumptions in much the same way, across a wider geography. My proposal is to use the 50th anniversary of the Helsinki Final Act in 2025 to inaugurate a new pan-European process of potentially global significance. An important consequence of such a process will be to consolidate the position of the European Union as the anchor of a wider Europe at the service of humanity.

The 17th century Moravian thinker, Comenius, formed an overview of the several different poles of tension in Europe, envisaged new processes and institutions, and sought to place the different spheres of knowledge at the service of the common good. As we are convening in Czechia, I will conclude with some observations on the philosophical parallels between Comenius, as he thought and wrote in the aftermath of the Thirty Years War, and the proponents of European and global détente in the 21st century.

The Social, Legal, and Scientific Context for Ethical Conduct in Public Health Research and Practice

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Indigenous knowledge recognizes that, without a flourishing environment, human survival is impossible. Many indigenous communities subscribe to the Seventh Generation (ethical) Principle: make major environmental decisions only after considering their potential impacts seven generations hence. Western knowledge, a profound cultural influencer in the world, is catching up with the understanding that living in harmony with the environment is crucial to the sustainability of life on Earth. This is why environmental health is, *a priori,* foundational to public health.

To operationalize these understandings and advance them among the professions, ethics guidelines, promoting normative codes of conduct for public health professionals, have been in place since the 1980s. These guidance documents are steeped in the discipline of moral philosophy from which theoretical and applied ethics derive. Despite these guidance documents cautioning against, among others, conflicting interests, this problem continues to manifest with growing calls for professional accountability to better protect the public's health. Why does this problem persist and why is it worsening? What can be done to reverse this trend?

To answer these questions, the utility of ethics guidelines must be considered. This can be done by appreciating the context defined by civilized society and in which public health professionals operate. As such, we live within social structures governed by laws. Legal regimes under which we are governed locally (i.e., hard-law instruments) and guidance documents that are aspirational in nature (i.e., soft-law instruments) are intended to facilitate the smooth functioning of society at local, country, and global levels. Each successive level provides a more complex context than the next for ensuring harmonious human relations and their influence on the environment. Ultimately, the global level is where concerns about the environment most matter; this is where normative standards are best formulated to inform local communities about behaviours needed if a flourishing environment is to be sustained.

While hard-law instruments are enforceable by policing, soft-law instruments are enforceable only by moral persuasion. In the professions, this translates into peer pressure. Hence, ethics guidelines in the professions remain aspirational in nature and rely on peer influence through training and mentorship for their applications.

The need to continually revise standards of practice arises when the social, legal, and/or scientific context in which public health professionals' work undergoes change. In response to this need, the International Society for Environmental Epidemiology (ISEE) developed its first set of ethics guidelines in 1996, adopted them in 1999, first revised them in 2012, and most recently again in 2023.

Aspiring to ensure the highest possible standards of transparency and accountability for the ethical conduct of environmental epidemiologists, revisions were justified because of innovation in technologies driving social and legal changes. It is these changes that precipitated the need for greater robustness in applying the scientific method to better expose scientific misconduct in the public interest. Specifically, the ISEE was prompted to revise its guidelines in 2023 by certain trends and growing research challenges, including a sharp increase in reports of conflicting interests, the destruction of the natural environment and the climate crisis, and the increasing use of artificial intelligence.

Add the role of warfare and conflict, and these damaging influences on the research and practice of the public health enterprise significantly contribute to mortality, morbidity, and diminishing prospects for a healthful future, globally. The challenges for public health are legion.

Further, since the adoption by the United Nations in 1948 of the Universal Declaration of Human Rights, an aspirational soft-law instrument, several other important human rights declarations and covenants have been periodically adopted. Specific to genocide, the 1948 Convention on the Prevention and Punishment of the Crime of Genocide was adopted. And, pertaining to the Middle East in particular, there are various international human rights instruments and declarations that apply.

The theme of this year's symposium becomes more compelling in bringing humanism, human rights, conflict and war into consideration for greater appreciation in defining the context in which public health is undertaken.

In my presentation, I will reflect on the above instruments, both the hard-law frameworks at different levels of governance, as well as the aspirational guidelines, declarations, and covenants emanating from professional organizations and United Nations and related agencies. I will demonstrate the problem of conflicting interests with examples from peer-reviewed articles that I have either led or co-authored over the past few years.

When revisions to ethics guidelines are undertaken by the professions, the moral integrity of its members must be encouraged and bolstered by the aspirational guidance offered. The guidelines must encourage work that is steeped in moral integrity. Could there be an influencing role for such guidelines among public health professionals employed in the "military-industrial-academic-big pharma complex" toward sustainability?

The normalization of adopting ethics guidance documents in settings that have hitherto worked against global sustainability might help to change these cultures to better protect the environment and place priority on human health and well-being over self-interest and greed. Ideally, creating a context in which decisions of an ethical nature are incentivised over all other options must be the goal. To achieve such an ideal, professional guidance documents and standards of practice will need to be expanded to incorporate ethical, social, and legal (both hard- and soft-law instruments) considerations surrounding human rights, genocide, and war. Imagine if every country's minister of Environment, Health, Industry, and Trade applied the Seventh Generation Principle, the likelihood is that the world would already be on a sustainable path.

From FAIR to CARE

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In recent years, the principles of data management in radiation protection have increasingly emphasized the importance of the FAIR (Findable, Accessible, Interoperable, Reusable) data framework to enhance research efficiency and collaboration. However, as our understanding of ethical data stewardship evolves, there is a growing recognition of the need to integrate CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) principles. This talk explores the transition from FAIR to CARE in the context of radiation protection and emergency preparedness, addressing the unique ethical considerations in managing sensitive data related to human health and environmental safety. By incorporating CARE principles, we can ensure that data practices not only advance scientific knowledge, but also respect the rights and interests of affected communities, particularly indigenous and marginalized populations. The discussion will give examples of cases where CARE could be applied to complement FAIR, addressing the challenges of integrating these principles, and the potential benefits for the future of radiation protection and emergency preparedness. The paper argues that such a shift represents a step towards more responsible, inclusive, and ethical practices in managing radiation protection and emergency preparedness data.

Post-disaster Ethics: Some Current Challenges Facing Fukushima Residents

Jacques Lochard[1], Thierry Schneider[2], Ryoko Ando[3], and Win Thu Zar[4]

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The Dialogues initiated by the International Commission on Radiological Protection after the Fukushima accident with all the concerned stakeholders have largely fueled reflection on the ethical dimensions of the radiation protection system initiated since the end of the 2000s by the Commission. In this context, the series of international conferences on the ethics of environmental health played a valuable catalytic role in refining this reflection.

While the early and intermediate phases of the accident largely contributed to consolidating the reflections concerning the fundamental values of the system, the first analysis of the feedback from the recovery phase, in relation to the co-expertise process implemented in several affected communities, made it possible to specify the ethical dimensions to which experts must adhere to engage stakeholders and gradually gain their trust. The current challenges of the recovery phase (lifting evacuation orders, dismantling of the installation, management of decontamination waste, discharge of tritiated water, etc.) highlight new ethical dimensions, especially those associated with power sharing between stakeholders and the many structural changes induced by the recovery of the affected areas. The latter changes include the indirect negative effect of regulations on people's lives, the aging and decline of the population, and the diversification of the characteristics of the population of the affected territories due to the arrival of new residents involved in the recovery phase.

Drawing on discussions from the recent Fukushima Dialogues, this presentation aims to shed light on the ethical considerations currently facing Fukushima residents.

The Only Thing We Have To Fear Is The Fear of Radiation Itself? From a Psychological to Economic Framing of Science Communication After Nuclear Disasters

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Science communication is commonly said to have undergone a paradigm shift in the 1990s and 2000s, in which the deficit model was abandoned in favour of dialogue between experts and lay-people. The history of nuclear disaster management has been mapped onto this shift. Following the 1986 Chernobyl disaster, the USSR engaged in top-down science communication efforts, premised on the position that the fear of radiation ("radiophobia") posed a greater threat to public health than radiation itself. Following the fall of the USSR, however, researchers from the European Commission would observe that efforts to raise scientific literacy had done little to combat anxiety, depression, and alcoholism, and began to develop a model of "co-expertise" in Belarus: working with local people to develop a "practical radiation protection culture". This approach would subsequently be adopted by the ICRP, which convened the *ICRP Dialogues in Fukushima* from 2011 and 2021. This paper offers the first ethnographic account of the Dialogues. I contend that co-expertise has not *replaced* top-down science communication but *displaced* it. Indeed, more people must now be taught not to fear radiation than before. This is not because co-expertise is duplicitous or fails to embody its ideals. It is a consequence of *how* the ICRP has remained *open* to different assessments of environmental safety. In vowing to "work with the people, not for the people", ICRP chose to treat the decision to stay in Fukushima and the decision to leave as equally valid and resolved to support those who remained in establishing "a new normal". Issues raised by local residents include how to rebuild their communities, reclaim traditions, and re-establish their livelihoods. Given that Fukushima Daiichi – like many nuclear power plants – is sited in an agricultural area, it is not surprising that locals have called on the ICRP to help them combat "harmful rumors" (fuuhyo) about their produce. Consequently, a program founded on the principle of moving away from top-down efforts to correct citizens' fears has nonetheless endorsed calls to correct misinformation about exposure to radiation. This apparent paradox rests on two forms of boundary work: a cartographic separation between those living in the affected territories (whose fear must be respected) and those outside it (whose fear must be corrected); and an epistemological distinction between framing the fear of radiation as a phobia (which is deemed morally unacceptable) or an economic problem (which is deemed acceptable).

Radiophobia and Mysticism. Ukrainians' Perception of the Chornobyl Disaster Through Art

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The knowledge about the causes and consequences of the Chernobyl disaster was censured in the Soviet period. This created a lot of fear and myths about what happened and the trauma remained unspoken, even until now. Panic and apocalyptic moods were reflected in Ukrainian art from 1986 to the 2000s. It was common for the liquidators, artists, displaced people, etc. Through art, we can trace the psychological trauma of Ukrainians, the mythologizing of the Exclusion Zone, and the demonization of atomic energy. From generation to generation, the attitude towards the disaster changes, and the image of the Chernobyl catastrophe in Ukrainian art changes. At first, these are symbolism (which also appears due to Soviet censorship), an almost magical and religious cause of the catastrophe (image of Chenobyl Madonna), and a sense of the apocalypse (Wormwood star). People from Polissya reflect on the impact on nature (Maria Prymachenko) and the poisoned landscape (Oleksandr Babak, Vasyl Skopych). And liquidators trying to show how it felt to fight with nuclear catastrophe (Petro Iemets). After the independence of Ukraine – the impact on the future generations (Illia Chychkan), motherhood (Kristina Katrakis), environmental problems, the future of Ukraine, and the Zone. The art of the 2010s and contemporary art started to create projects based on unscientific myths about radiation in the Chernobyl zone. The younger generation grew up with myths about the Chernobyl zone (mutants, stalkers), which are based more on popular culture than on facts, reproduces and spreads these myths. All this illustrates the lack of knowledge, fear of radiation, and belief in the mythical, which still exists in Ukrainian society. Through art, we can see how the perception of the Chernobyl catastrophe has been changing through the years and in different social groups.

Artistic Expression or Nuclear Inspiration: Some Reflections on the Artworks at the IAEA building in Vienna

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The visual arts are rooted in the life of the wider community, and while they may lack direct radiation- or ethics-related reference, they can be influential, can illustrate, communicate, and inform. They may also have formal institutional support, as is evident in the collection in the IAEA building in Viena, although the reasons for this are seldom explored publicly.

The works at the IAEA were viewed over several decades. Their provenance was identified, but records were often incomplete or very difficult to access. Most were gifted by governments. The works were photographed and interrogated to identify relevant direct or implied messages. The messages were tested for impact during guided tours for professionals attending conferences in the building. Additional works from the wider artistic community may also be included.

There are well over 150 artworks in the IAEA collection. Many are portraits of distinguished figures from the agency's/UN's evolution. These, with a few exceptions, lack the power to move, surprise and/or challenge, a feature of high art. About 30 of the works might be included in the latter category. A selection of these, <10 and a small number of related works will be presented.

This could be regarded as an extension of arts events organised at ECMP 2022 (European Congress Medical Physics) and at the 2023 AAPM Annual Meeting (American Association Medical Physics) held under the banner of *The Art of Science; The Science of Care*. The works involved inspire, challenge, inform, and enrich experience.

Technology and Environmental Health: Mediation Theory and its Application

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Contemporary philosophers of technology and engineering agree that artifacts are not neutral. Everything we design and create restructures our relationship with the world, other individuals, and ourselves. In our presentation, we first introduce fundamental insights from phenomenology to illuminate how artifacts influence these relationships. We emphasize mediation theory and its application to environmental health, demonstrating that it provides a valuable framework for analyzing complex cases in this field. Additionally, we explore how the tradition of virtue ethics can offer tools to proactively address and navigate environmental health issues identified through mediation theory.

Engineering Ethics Education Seen Through an Ethics of Environmental Health Lens

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In this presentation, I introduce the Routledge International Handbook on Engineering Ethics Education, which is the latest book project in which I have been involved. I will reflect on and analyze the book content in terms of how, respectively, Environmental Health and Ethics are addressed. I finally provide some remarks on how the ethics of environmental health community can contribute to engineering ethics education and vice versa.

Empowering Collaborative Governance through Open Nuclear Waste Dialogue

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This presentation will describe the motivation, goals, and activities of the Consortium for Empowering Collaborative Governance through Open Nuclear Waste Dialogue (NuWaDi). This project seeks to cogenerate knowledge around public perceptions and values for collaborative decision-making on issues of management, transportation, and disposal of nuclear materials in the United States, focusing on the state of South Carolina and neighboring counties. Key components include (1) public funding opportunities to support stakeholder-driven projects and meaningful participation in the Consortium, (2) public engagement and outreach events to connect with the community and engage on complex issues associated with nuclear waste and environmental justice, and (3) development and use of modern, accessible communication tools and educational resources for effective exchange of ideas and robust human capital development. For example, NuWaDi recently hosted a booth at a local Fine Arts festival. The team explored (with nearly 2,000 visitors of all ages over three days) the cross-cultural impact, experience, expression, and perspective of nuclear science through various stories, conversation starters, and hands-on activities with themes of peace, hope, and stewardship; the priority of this effort was on providing an engaging and fun experience rather than delivering or gathering information although the nature of the event facilitated mutual learning. Reflecting on collective memories is an important part of forging a sustainable path forward together, particularly when it comes to issues surrounding nuclear waste and waste management. Ultimately, this work seeks an interdisciplinary and egalitarian approach to addressing modern challenges associated with consent-based siting in the United States.

Social Vulnerability Assessment in the Vicinity of Hazardous Material Sites, Chemical Parks, and Nuclear Power Plants

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Health risk and ethical questions need more concerted analysis. Besides daily health risk, catastrophic events, such as natural hazards or major accidents, need to be included in such assessments as well. Social vulnerability is a stream of research and practice where differences in the susceptibility, but also capacities of social groups and populations, are analyzed regarding daily livelihood or disaster risks. In the context of the chemical industry, nuclear power generation, or other hazardous sites, studies have been conducted in Germany, which will be presented here. It is inspired by similar research about so-called Natech; the interrelation of natural hazards and technological accidents.

The guiding research question in two papers related to which people live in close proximity to potentially hazardous sites in Germany. One paper analyzed the distribution of demographic characteristics around nuclear power plants in Germany. A second paper has analyzed the distribution of populations and social vulnerability characteristics around chemical parks and other sites registered under the Seveso directive. The case of nuclear power plants is peculiar, since Germany decided to phase out nuclear power generation. Currently no nuclear power plants are active in Germany. However, it would be a neglected risk not to consider risk analysis for the remaining surrounding populations. This is because building back nuclear power production takes years, if not decades. The case is also interesting since nuclear power production in Germany has lasted decades. This enabled an analysis of certain population groups that have concentrated in residential areas close to those facilities.

The analysis reveals that, indeed, there are differences in social demographic characteristics such as age, gender, and foreigners. It also reveals changes in those population compositions over decades. Also, in the second paper we found similar correlations, with spatial variations, especially around urban centers, but also along the national borders of Germany. As a limitation, this would need further research, especially about other contextual factors, such as the general prevalence of industrial areas close to urban centers. But, especially for spatial planning and for the analysis of interrelations of natural hazards with human infrastructure, the studies reveal methodological ways of comparing the distribution of population characteristics over larger regions.

Environmental Health in Social Work – Bridging Boundaries between Disciplines

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Environmental health is a key topic in social work that links public health, social justice, and environmental sustainability. It is a challenging topic for social workers as they work at the boundaries between environmental health, social welfare, and the well-being of individuals, and not just with vulnerable populations. Environmental health is closely intertwined with green social work and highlights the role of social work in advocating for healthier environments and more equitable communities.

The advocacy role of social workers in environmental health is to help residents of selected localities with demands for a better environment - e.g. cleaner water, air or surroundings. They may also support families displaced by climate-related disasters, providing both immediate assistance and long-term support in rebuilding their lives. Additionally, social workers can play a critical role in educating communities about environmental risks and empowering them to take action to protect their health.

It is evident that social workers may not feel confident in dealing with environmental problems, which can be very complex and may require special knowledge as well as skills. There is also a lack of integration between the social service system and environmental protection. The role of the social worker as an intermediary in these areas is quite new and represents a challenge for the future.

This concept obviously places demands on innovations in social work education. It is therefore essential to consider incorporating environmental justice into the curriculum of undergraduate or graduate programs and to push for systemic changes that would lead to the involvement of social workers in solving the environmental health concerns of communities that will actively participate.

The RRADEW Project – An Overview

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The overall objective of RRADEW ("Resilience to RADiological Events in Wartime") is to enhance nuclear emergency preparedness, response, and recovery (EPR&R) systems by developing methodological and technological approaches to strengthen resilience in the context of war or armed conflict situations.

Despite extensive research on planning and response for radiological and nuclear emergencies, existing studies and guidelines have not yet considered the context of armed conflict situations, which present unique challenges that can compromise the safety and well-being of both affected populations and responders. To meet this objective, RRADEW, brings together 14 institutions, including two from Ukraine, with a broad expertise in EPR&R, covering technical, social, ethical, legal, and regulatory aspects. Supported by extensive stakeholder engagement, and bringing expertise from other areas of disaster research, RRADEW will address emergency management as a system of closely linked social, organisational, and technical elements.

RRADEW research adopts a scenario approach that allows key actors to envision, anticipate, and solve problems that can arise during disasters. This recognizes that contingency planning is an important part of EPR&R. It follows the United Nation's Sendai Framework on Disaster Risk Reduction definition of resilience as the "ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner". In the context of nuclear emergency preparedness, this requires a critical reflection on how an armed conflict situation may impact the feasibility and adequacy of current planning, response and recovery strategies.

RRADEW will assess and prioritize plausible scenarios for the deployment of hostilities at nuclear facilities and consider their possible radiological consequences. The resilience of the emergency management system will be analysed through case studies, the development and application of a resilience analysis platform, and assessment of legal, ethical, and social issues. The final output of the project will be guidance and recommendations for improving radiological protection and strengthening resilience in situations of armed conflict, as well as education and training materials for better preparation of stakeholders.

Scenarios of Accidents at Nuclear Facilities During Wartime

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After February 24, 2022, when Russia invaded Ukraine, the global community has been deliberating on the issues of nuclear terrorism and nuclear safety during military operations. To evaluate the impact of military operations on nuclear infrastructure facilities, a matrix was developed as part of the RRADEW project. This matrix aims to quickly predict the qualitative consequences of a nuclear facility in a country at war, and, if needed, to provide detailed descriptions of quantitative impacts.

The proposed matrix includes five dimensions related to wartime scenarios:
1. Types of nuclear facilities: These include operating nuclear power plants (NPPs), NPPs in cold shutdown, spent fuel storage facilities, and lost sources of ionizing radiation.
2. Location of the nuclear facility: This dimension considers whether the facility is directly on the front line, within 50 km of the front line (referred to as the ZNPP scenario, which involves the risk of hostage-taking and possibility of artillery fire), far from the front line but within the range of air weapons, or inaccessible to destruction due to its deep location.
3. Type of interaction with military operations: This includes scenarios such as hostage-taking of a nuclear facility and its personnel, shelling of the facility by long-range weapons, and hybrid military operations involving cyber attacks on the information and computer system.
4. Cooling of reactors and spent fuel pools: This dimension takes into account whether the cooling is done using artificial reservoirs, natural reservoirs, supply from wells, or is deemed irrelevant.
5. Measures to protect civilians: This outlines the need for evacuating civilians, warnings and evacuation plans in place, complications in warning civilians by the authorities, and scenarios where evacuating civilians is impossible.

Different combinations of these scenarios are then assessed based on several criteria:
1. Economic Impact: This measures the extent to which the economy can recover from a nuclear incident and ensure sustainability during and after the incident.
2. Social Impact: This measures the resilience of society in the face of a possible incident, public awareness of radiation safety, and the presence of radiophobia in society.
3. Information Influence: This assesses the availability and influence of communication channels in the event of a nuclear incident.
4. Political and Military Impact: This determines ability to counter propaganda and implement policies to protect the population.
5. Health Impact: This measures the dose burden on the population in the area affected by the nuclear incident.
6. Educational, Scientific, and Technical Impact: This assesses how a nuclear incident will affect the scientific and technical potential of the country.
Each scenario is assessed by experts on a five-point scale to determine its impact, providing a tool for the rapid assessment of the impact on security, social protection, and the likelihood of dangerous scenarios.

A Pacifist's Look at the Ethical Challenges of an Armed Conflict Situation

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Recent military conflicts have, next to the devastating consequences of death and destruction, led to the need for attention to care for the radiological protection of citizens, intervention workers, and the environment in affected war zones. Potential collateral (or intentional) damage to the Chernobyl site and to the still operated (but now decommissioned) Zaporizhzhia nuclear power plant in the context of the Russian instigated war in Ukraine, is a topic of worldwide concern. International policy institutions, such as the European Union and the International Atomic Energy Agency, have little to no control over this threat. Regardless, efforts are made to initiate policy-supportive research focusing on emergency preparedness for and response to radiological incidents and accidents in the context of war. As an example, the European-funded research project 'Resilience To Radiological Events In Wartime' (RRADEW Project) aims "to enhance nuclear emergency preparedness, response, and recovery (EPR&R) systems by developing methodological and technological approaches to strengthen resilience in the context of war or armed conflict disasters." Although the project focuses mainly on the war in Ukraine (with participation of two Ukrainian research institutes), it aims to produce general "guidance and recommendations for improving radiological protection and strengthening resilience in situations of armed conflict, as well as education and training materials for better preparation of stakeholders."

In this paper, I reflect on the context of justification for this kind of research project. From a 'neutral' perspective, the war situation can be seen as the point of departure from out of a resigned or pragmatic attitude ('it's happening' / 'it can happen'). From there, institutions may possibly be confronted with ethical questions with respect to their own involvement, as in whether, or not, their statutes allow participation in research that contributes to radiological protection of citizens but may also – indirectly – strengthen the military force. The general questions put forward in this paper are: (1) whether and, if so, why and how it would make a difference for the research if it would be perceived and carried out from an ethics perspective of pacifism, and (2) why and how that perspective would matter for the specific ethical challenges of the research and its policy context.

How are Protection Measures Implemented after Nuclear Disasters?

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Nuclear power plants and other nuclear facilities are used for peaceful purposes and should not be targeted in military attacks. The Russian federation's actions, including shelling and capture of nuclear facilities at the Chernobyl and Zaporizhzhya NPPs, bombing of the South Ukrainian NPP site, and the Neutron Source research facility in Kharkiv, have violated international principles of nuclear safety. Following the analysis of wartime experiences in Ukraine, it is crucial to assess potential hazards and their consequences at each nuclear power plant (NPP) site. Additional technical and organizational measures should be developed.

The safe operation of nuclear facilities, emergency preparedness, monitoring, availability of necessary materials, diesel fuel stocks, mobile power supply units, staff scheduling, and personnel rotation should all be considered. Staffing levels at NPPs during special circumstances should be minimized, job descriptions and operating instructions reviewed, and amendments to technological regulations introduced to ensure safe operation under special conditions.

In the event of a real threat to an NPP site, all power units should be put into "cold shutdown" mode. Maintenance and repairs of systems and equipment during this time should be performed only as necessary for safe nuclear facility operation. Criteria should be developed to determine which power units should be switched to reduced power or shut down completely when the country cannot afford to shut down all units.

The experience of physical protection during military operations should be analyzed, and appropriate adjustments should be made. However, this specific issue should be discussed in a "closed" format. Existing plans for protecting personnel and the public in the event of a radiation accident at a nuclear power plant should be revised. Emergency plans should address the reliability of radiation monitoring, increased reliability and independence of communication channels, additional redundant evacuation routes for the population, and the delivery of personnel, diesel fuel, and spare parts to the facility in case of disruptions in logistics. Plans should also consider past experiences, such as having to rotate Chernobyl NPP personnel on fishing boats due to disruption of delivery routes.

Challenges for the Application of the Ethical Values of the Radiological Protection System in the Context of War or Armed Conflict

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Considering preparedness and resilience to a nuclear event in the context of war or armed conflict needs to address some specific challenges. These situations are notably characterized by a lack of clear legal framework and default of respect of existing framework/convention, limited access to the affected areas, possible damage to critical infrastructure and deterioration of hospital, disruptions and barriers in communication, strong disturbances of the socio-economic activities and public services as well as competing issues/decisions between military decision framework/objectives and protection of civil society. Taking into account these challenges, the European research project RRADEW aims to assess the robustness of existing guidance in the context of war or armed conflict and amend guidance to foster resilience in the case of a nuclear event.

This presentation will discuss the specific challenges for ensuring the respecting of ethical values in the context of war or armed conflict. In principle, the ethical values underpinning the system of radiological protection should apply whatever the context. Therefore, it is useful to highlight the difficulties and challenges encounter for applying ethical values in this context. In addition, it is worthwhile to identify the specific values to be further developed or added to cope with this context.

For this purpose, the presentation will propose a preliminary analysis of the conditions and possibilities for the application of the ethical values developed by ICRP in the context of war or armed conflict. Notably, the evaluation of beneficence and non-maleficence and the associated concept of well-being will be considered as well as the uncertainties for defining which situation could provide more good than harm. Similarly, adopting a prudent attitude with regard to radiological risk will clearly be challenged by the balance of the different risks and threats as well as their possible evolution. A specific issue will be to take care of vulnerable populations and to apply the value of justice in order to identify the priorities in the implementation of protective actions in case of a nuclear event. Due to the context of armed conflict, respecting the dignity of individuals and promoting solidarity and empathy will be key issues. Specific difficulties will be encountered to engage in a fair dialogue and to develop participatory process, with the aim to ensure the continuity of daily life. Another issue is the application of the labor convention and the identification of the role of trade-union to cope with the protection of workers during armed conflict.

This presentation will also address the procedural ethical values such as: ensuring transparency with disturbed communication channels and possible disinformation; the meaning of accountability and sustainability in this context, including the consideration of the responsibility of the different stakeholders and decision-makers, and the capacity to identify the possible future; the ability to develop inclusive participatory and decision frameworks including military administration.

Societal Resilience and Democracy in Central European Countries

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According to IDEA, ensuring resilience of democracy lies within the ability of a political system to *cope, survive and recover* when democracy faces a complex crisis. Among important institutional and other properties democracy needs to develop to respond successfully to crisis's is also a societal resilience. Societal resilience ideally means

- *Flexibility:* the ability to absorb stress or pressure;
- *Recovery:* the ability to overcome challenges or crises;
- *Adaptation:* the ability to change in response to a stress to the system; and
- *Innovation:* the ability to change in a way that more efficiently or effectively addresses the challenge or crisis (IDEA 2017).

We will use this perspective, theoretical framework as the focal point of our analysis of a topic which polarised democratic societies among the most – the topic of migration. We will try to examine the social polarisation in Central European democracies and in the rest of the EU. We will draw comparisons and point similarities in societal responses to the phenomenon of migration. We will also examine the role of non-state actors, public institutions (for example universities) and their role in the field of preparing future social worker and teachers of civics. How and why after 35 years after the end of Iron Curtain still prevail profound structural differences in many aspects of given migration paradigm and societal "responses" to it?

Resilience to Radiation Emergencies in War or Armed Conflicts: Navigating the Ethical Issues

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The European RRADEW project (Resilience to radiological events in wartime) addresses a gap in emergency planning and response by exploring resilience to radiological and nuclear emergencies in the previously unexplored context of war or armed conflict situations. This context presents unique challenges for both the safety and well-being of affected populations and first responders, but also ethical challenges that need to be investigated and addressed.

This presentation will discuss ethical issues identified in the reviewed scholarly literature on disaster resilience in war or armed conflict situations, and resilience to nuclear emergencies. These issues range from distributive justice and the 'responsibilization' of citizens, to the concept of 'forced' resilience, among others. The discussion will highlight the relevance and implications of these ethical considerations for resilience to radiation emergencies in war or armed conflict.

Operational Choices for First Responders in Doubtful Situation

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Surprisingly, the main ability of emergency responders is not to extinguish fire, rescue, deliver care, or enforce law, but to deal with an uncertain situation. During a doubtful event, they must often accept to be in danger, and sometimes to put colleagues and friends in danger, especially for the incident commander and the members of his/her command pyramid.

The responders are divided into three categories.

- the regular responders without a lot of knowledge about radiological and nuclear hazards. They are able to protect themselves and the population, they are able to follow their tasks in contaminated areas, and to go through a decontamination process. Often, incident commanders are non-specialised responders.
- the specialised responders that are regular responders with specialised knowledge and abilities like radiation detection (dose-rate and count-rate measurements), radionuclides identification, radiologically (sort of) involved people, management of a decontamination unit, etc. They mainly belong to emergency services hazardous material teams or to intervention teams of radiation protection authorities or institutes. Hazmat teams are present in, more or less, 30% to 50% of countries.
- the expert responders, belonging to radiation protection authorities or institutes. They are highly competent in radiation protection and nuclear intervention, but their experience of management in doubtful situations is weak.

We will focus on the regular and specialised responders.

Each responder, especially if h/she is regular, is drawn from our society and shares its concerns, and sometimes its presuppositions. The radioactive risk is not perceptible as are, for example, fire, flood, or toxic clouds, leading to diffuse or strong concerns, despite extensive training.

The purpose of this communication is to share the sociological substrate in which the interveners are immersed and to return to the parameters allowing us to accompany the responders in their exposure during an intervention of a radiological or nuclear nature, whether it is mono-dimensional or multi-dimensional.

Beyond that, the decision-making mechanism in an uncertain universe will be presented.

Another important parameter is the inter-departmental cooperation needed to face an event of this nature.

Ethical Dilemmas at Fukushima Daiichi Nuclear Power Plant

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This communication explores the ethical dilemmas and tragic choices facing nuclear threats in a war context. Based on the analysis of the Fukushima Daiichi nuclear accident, we will examine the ethical questions that could arise from the threat of radiological incidents in wartime. The Fukushima incident highlighted the complexities of decision-making in high-risk environments, where institutional protocols, organizational hierarchies, and field realities may obscure ethical considerations and the personal sacrifices of individuals (Gisquet 2021). This communication proposes a framework for addressing the specific ethical considerations that could occur in wartime, considering radiological threats.

We intend to use this framework in our RRADEW study to understand resilience capabilities in the face of radiological threats in wartime through various case studies, including that of Ukraine.

Indeed, ethics and resilience are interconnected as ethical considerations shape the decision-making process during radiological threats, influencing how communities prepare for, respond to, and recover from such incidents. Understanding these ethical dimensions can enhance resilience by ensuring that responses to radiological threats are just, equitable, and sensitive to the needs and sacrifices of all affected individuals.

Environmental Contributions to Common Chronic Diseases and its Exacerbation in Armed Conflict Situations

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Major reductions of infectious diseases elevated chronic maladies as the main obstacles for healthier, longer lives. Yet different influences complicate understanding and reducing them. *Everyone* is vulnerable to the leading chronic dysfunctions—cardiovascular disease, cancer, chronic obstructive pulmonary disease, diabetes and cirrhosis. Sixty-percent of us (117 million) have a chronic illness, 40% have two or more with 70% likely dying from one. Afflictions will rise to 78% when the cohort reaches age 55. Costs of these illnesses in the US approach $4 trillion dollars. Several factors invite them: aging, lifestyle choices, involuntary toxic exposures, and inferior social policies in states, neighborhoods, healthcare, workplaces, and, I will argue, armed conflict.

In this presentation, I largely call attention to the contributions of toxic substances to chronic illnesses and then extend these ideas to some of the major toxicants to which soldiers and civilians might be exposed to during armed conflicts.

Value Incommensurabilities and Incomparabilities regarding Health and Environment in Armed Conflicts

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Principlism is an ethical framework which does not attempt to judge all actions or rules by a single fundamental standard (such as utility in the case of utilitarianism, or universalizability in the case of deontology), but is based on several less general principles, or values. The ones proposed by Beauchamp and Childress in their seminal work "Principles of Biomedical Ethics", for instance, are respect for autonomy, non-maleficence, beneficence, and justice. All four possess *prima facie* validity, i.e. they all appear to apply at first sight, but there may sometimes be natural tensions among them. Assessing which principle should take precedence in a particular situation is called "balancing".

A major challenge to the process of balancing is the fact that the relevant principles, or values, are often incommensurable, i.e. there is no common measure which would help to determine their relative weights. How can respect for the autonomy of an individual, for instance, be judged as more or less important than avoiding harm to his or her health (non-maleficence)? How can avoiding harm to an individual's health be judged more or less important than a fair distribution of health resources in a population (justice)? Such incommensurability between individual and communal benefits and risks constitute one level of the problem.

Things become even more problematic if one takes into consideration non-human beings, or whole ecosystems. One may wish to assign intrinsic value to nature, i.e. judge effects on the environment not only by their importance for humans, but how can the preservation of a particular endangered species be judged as more or less important than providing space for human housing or energy production? Again, there is no common measure available.

The whole problem is further aggravated in an armed conflict situation where other considerations are added and may even take precedence. These may be strategic in nature, or more generally political. How can civil rights and democratic freedoms be weighed against the risk to health and life, and does the intrinsic value of nature even matter in such a situation?

A few decades ago, and to some extent still now, it was suggested that the only option for reasonable judgements between different options is risk-benefit analysis, which translates all aspects of a situation into money value (i.e. monetisation) and suggests a final decision on the basis of net loss or gain. This approach involves concepts such as the "Value of a Statistical Life" and for that matter alone has been criticised to be incompatible with the idea of human dignity.

In this paper, I will point out that incommensurability, i.e. the impossibility of judging widely disparate values by a common measure (such as money), does not necessarily imply incomparability. I will introduce the basic idea of decision-making tools that may offer a way out of the impasse by letting either experts, or stakeholders in general, assign relative weights to certain values in certain situations, and then "calculate" what would be the most adequate decision. A key framework here is Multiple Criteria Decision Analysis (MCDA). Without going into much depth, I will suggest that ethics, in particular the ethics of health and environment in armed conflict situations, is in need of such methods – and perhaps in need of cooperation with people from operations research who have long applied these methods.

Psychological, Educational and Ethical Approaches in Conflict Situations

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Armed conflicts and natural disasters can cause significant psychological and social challenges in affected populations. In general, conflicts are complex and create unbalanced situations that require a new solution for change to occur.

Human behaviour within social and individual (interpersonal) relations have been studied for decades. Examples of human behaviour-change depend on the individual roles and local context as well. Problem-solving underlines the need for changing perceptions, analysis of causes, and applying mediation processes, where needed, to help identify the best option for all involved parties if a "win-win" solution is to be achieved.

This communication expands on existing psychological tools and how they can be used together with moral (ethical) and educational applications in practice.

Ethical Aspects of Science Popularization during Wars and Crises: Challenges and Opportunities

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During natural disasters and wars, there is usually a decrease in scientific progress. Funding for scientific developments is reduced, money is redirected to other necessities, infrastructure is damaged, and scientists lack the necessary resources (both material and psychological) to conduct and promote research. During these times, fake and pseudoscientific theories gain popularity in society, and individuals without proper expertise, such as bloggers, gain attention, while scientific research takes a back seat.

The "Science Popularization During Wars and Crises: Challenges and Opportunities" White Paper (Oleksii Boldyriev, Bohdan Hrushetsky, Hryhoriy Riy, Ilona Sviezhentseva, Kateryna Shavanova) analyzes the state of popular science in Ukraine during the pandemic and the full-scale Russian invasion. The research found that Ukraine lacks a clear understanding of the value of science popularization, which worsened during the COVID-19 pandemic and through the state of war.

Science popularization plays a significant role during crises and can increase public awareness of important topics, unite people, and boost economic development. This has been seen in the examples of the USA during the Cold War and South Korea.

The science popularization sphere in countries affected by war has developed slowly due to lack of resources and attention. For example, the pandemic and the full-scale invasion led to changes in the Ukrainian science popularization sphere. The number of popular science projects decreased slightly, trust in science increased, popularization moved online, the audience expanded, new funding sources emerged, the influence of Russian science popularizers diminished, and there was an increased demand for Ukrainian popular science books.

Science popularization should not be viewed as a cure-all for countering misinformation, but is crucial for enhancing public education and fostering critical thinking. Without popularization, pseudo-scientific ideas can have a more substantial impact on society. Science popularization may be important in countering disinformation, but it should focus on creating a comprehensive structure with its own narrative to educate the audience on critical thinking, rather than solely reacting to Moscow's fabrication of the truth. The Ukrainian experience in science popularization during crises can be valuable for Eastern European countries undergoing decolonization, where the influence of Russian science has been strong.

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