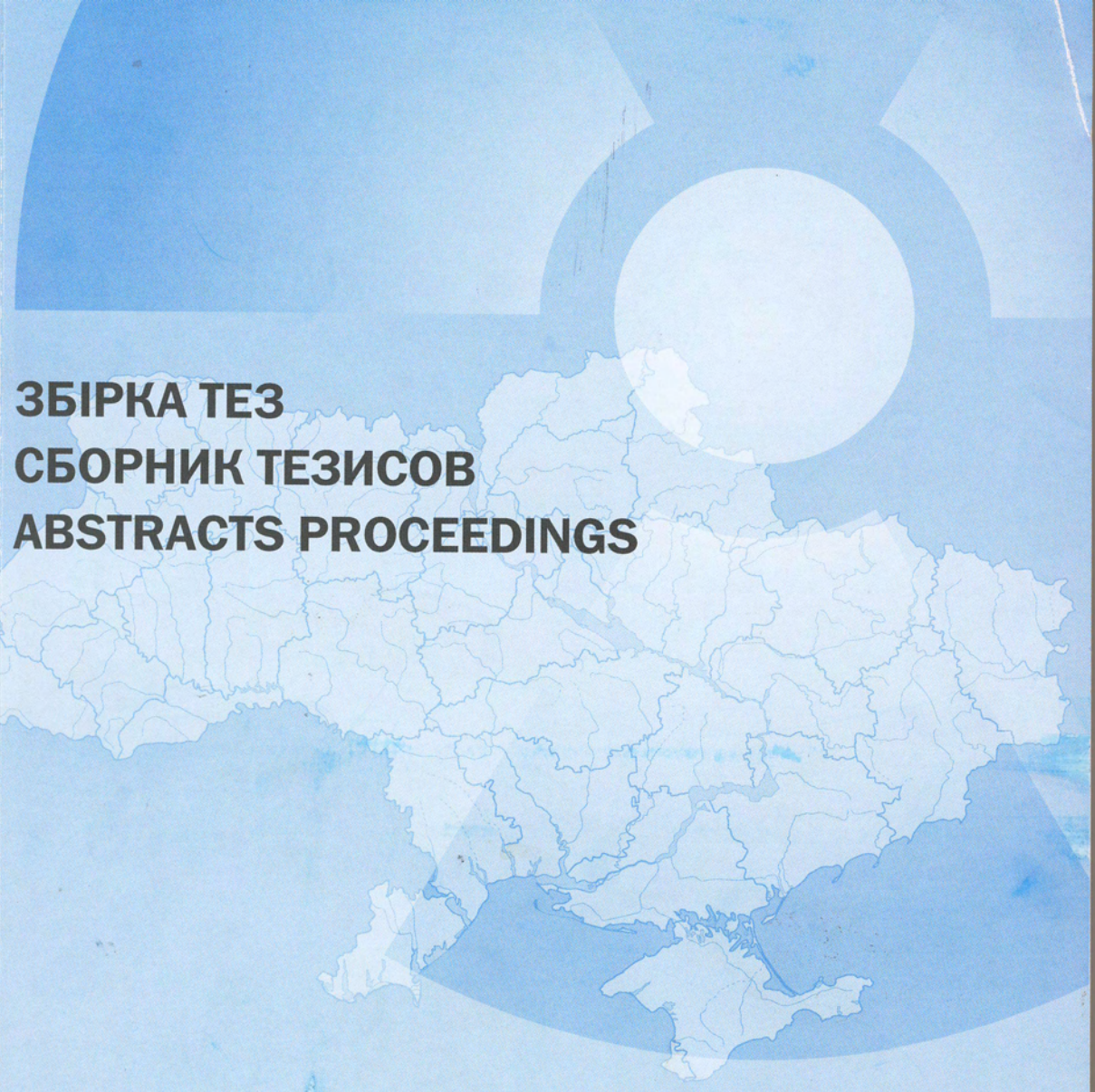
ЗБІРКА ТЕЗ
СБОРНИК ТЕЗИСОВ
ABSTRACTS PROCEEDINGS



25

INTERNATIONAL CONFERENCE

Міжнародна конференція
Двадцять п'ять років
Чорнобильської катастрофи
Безпека майбутнього
20-22 квітня 2011 року
Київ, Україна

Международная конференция
Двадцать пять лет
Чернобыльской катастрофы
Безопасность будущего
20-22 апреля 2011 года
Киев, Украина

International Conference
Twenty-five Years after
Chernobyl Accident
Safety for the Future
April 20-22, 2011
Kyiv, Ukraine

S - 5

Радіоекологічні наслідки Чорнобильської катастрофи, ведення господарства на забруднених територіях, соціальний та економічний розвиток територій, які підпали під вплив Чорнобильської катастрофи: успішні моделі розвитку, подолання стереотипів і підвищення інвестиційної привабливості регіонів

Радиоэкологические последствия Чернобыльской катастрофы; ведения хозяйства на загрязненных территориях; социальное и экономическое развитие территорий, подвергшихся воздействию Чернобыльской катастрофы: успешные модели развития, преодоления стереотипов и повышение инвестиционной привлекательности регионов.

Radiological consequences of the Chornobyl disaster, farming in contaminated areas, social and economic development of areas exposed to the Chornobyl disaster: successful development models, overcoming stereotypes and improving the investment attractiveness of the regions.

- The global dispersal of radioisotopes from the accident allowed scientists to use the contaminants as tracers of many physical, chemical and biological phenomena. Several international modeling exercises successfully used the Chernobyl contaminants to test and improve many radioecological models that predict the transport and fate of contaminants in aquatic and terrestrial ecosystems.

S-5-5

NEEDS FOR DEVELOPMENT OF WILDFIRE MANAGEMENT IN THE CHORNOBYL EXCLUSION ZONE

Oliver C.D. [1], Zibtsev S.V.[2], Hohl A.M.[3], Goldammer J.G.,[4], McCarter J. [5], Petrenko M.M. [2], Borsuk O.A.[2]

[1]Yale University School of Forestry and Environmental Studies, New Haven, CT, USA
[2] National University of Life and Environmental Sciences of Ukraine, Kiev, Ukraine
[3] Humboldt State University, Arcata, CA, USA
[4] Global Fire Monitoring Center, Freiburg University, Freiburg, Germany
[5]North Carolina State University, Raleigh, NC, USA

The Chernobyl nuclear disaster spread radiation over hundreds of thousands of hectares of forests in Ukraine as well as nearby countries. The most seriously irradiated were cordoned off as part of the Chernobyl Exclusion Zone (CEZ). Scientific research began immediately to determine the effects of this radiation and its possible spread and impacts. The accumulated knowledge from this research, other forest and nuclear research, and the understanding of forest fire behavior from around the world culminated into tTwo synthesizing studies of the irradiated forest in the Chornobyl Exclusion Zone (CEZ) are presentedChernobyl Exclusion Zone:

1) A fire risk classification system based on stand structure and fuel loading was used in conjunction with a stand inventory to assess the wildfire risk in the Ukrainian portion part of the Chernobyl Exclusion ZoneCEZ. The majority of the inventoried forest consisted of stands with a high wildfire risk of sustaining a crown fire. The assessment model also determined that active forest intervention such as thinning could reduce the crown fire risk, especially in conjunction with more modern early fire detection and rapid fire fighting systems. The estimated cost of management is quite low compared to the economic loss to Kiev from impending smoke radiation threats.;

2) The potential implications of a wildfire burning under extreme conditions on populations living and working near the CEZ was also assessed. A worst-case scenario We were modeled a worst-case scenario in which it was assumed that a fire would consume the available fuels and release deposited radionuclides into the atmosphere. The complete model consists of a source model, a transport model, and an exposure model. The model was designed to be extremely conservative and to over-estimate potential exposure. The estimated exposure of populations 25 or more kilometers from the source of the fire is below the critical thresholds that would require evacuation under Ukrainian law. However, the response to the fire would require limiting ingestion of certain foodstuffs to avoid exposure via ingestion. Thus, although the risk of a high-intensity fire in the CEZ is high, the effects on human populations living adjacent to the zone can be readily mitigated.

These The results of two studies show the opportunity and need for deliberate action to reduce the wildfire risk issues ofin the irradiated forests, rather than either panic or continued neglect. The two studies have not been sensationalized both because that is not the nature of science and because we feared that high visibility may attract arsonists and terrorists.

The efforts relative to the Chernobyl Irradiated Forests suggest several "lessons learned" relative to nuclear wildfires the forests:

First, if one wishes to be able to carry out ongoing monitoring and respond to new problems as they develop, it is important to have both a reliable source of funding and an independent

scientific community. We initially had difficulty securing funds to carry out the work described above. We wer fortunate that a private foundation was willing to provide financial support for our project. We were also fortunate that a community of scientists, including individuals both inside Ukraine and around the world, existed that was able to work cooperatively, internationally, & without concern about political influence on collecting, analyzing, interpreting, and disseminating the information responsibly.

Second, an international "emergency" entity is needed that can offer technical and managerial assistance while at the same time respecting national sovereignty and steering clear of local politics. We contacted many international organizations during the early phases of our study. However, decisions to act on, or even study, the problem of radioactive forests in the CEZ were delayed because political transitions were occurring within Ukraine. While we recognize the importance of respecting Ukraine's sovereignty, a catastrophic fire would have international consequences and needs to be addressed at the international level.

Third, the press community did a very good job of presenting the irradiated wildfire situation in a balanced perspective when fires occurred and more were threatened this past in Augustsummer 2010. Even though the scientific message was not charismatic "sensationalism," it was effectively reported—even when some non-scientific groups were trying to create more sensationalism.

Overall, the next steps in addressing the irradiated forests need to avoid the polarized approach: the situation is neither so threatening that it needs crisis action to address it, nor is it so benign that it can be neglected. It is appropriate to avoid crisis and sensationalism and proceed deliberately to reduce the impending fire situation.

- diological phenomena was enhanced because of studies conducted at Chernobyl. We highlight but a few (e.g. hot particles and their influence on the environmental mobility of Sr; the uncanny persistence of ^{137}Cs in some grazing systems; the large contribution to human dose caused by the consumption of contaminated mushrooms, berries and freshwater fish; enhanced radioecological understanding of non-agricultural ecosystems).

The radioecological community has also missed several opportunities provided by Chernobyl. The lessons lost include the following:

- Because of radiocaesium's importance to dose, much interesting science was missed on other isotopes relevant to nuclear waste or NORM issues (e.g. Pu, Tc, I-129, U, Th).
- Radioecologists failed to maintain the funding momentum for key empirical research programmes initially generated by the accident. The reasons for this failure are complex and include the perception by funding agencies that enough research had been carried out on Chernobyl and that, in the new millennium, Chernobyl was an "old story". A portion of the blame, however, must be directed towards scientists' failure to adequately justify their research to stakeholders and funding agencies.
- Scientists missed an opportunity to study the effects of long term, multi-generational exposures to radiation on native populations of biota. A continued failure to conduct such field research will result in the science of radioecology being ill prepared to contribute to the risk assessment process, and stakeholders' being misinformed as to what constitutes safe environmental limits to exposure.
- Radioecology is governed by a disproportionate effort to collect monitoring data, and not enough by experiments designed to specifically test hypotheses. This makes radioecology a "soft" science and obliges us to progress slowly, at best.
- Radioecological science may be biased by its small community, which is focused on applied solutions to problems determined by regulatory agencies. This means that it may be over-governed by an anthropogenic approach central to human dose, and not sufficiently open to alternative approaches from other areas of science.