Tailings Management Facilities in Ukraine – national and transboundary environmental threats

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Introduction

I. TMFs database of Ukraine

II. TMFs Research 2018-2019
   ▪ Dniester River Basin project
   ▪ Project in Donbas conflict affected area

III. National & EU legislation

Conclusions
TAILINGS MANAGEMENT FACILITIES (TMFs)

Designed for SAFE STORAGE of waste

In practice —>

SOURCES OF ACCIDENTAL POLLUTION & INFLUENCE BY POLLUTED TERRITORIES

- chronic pollution
- major accidents

Introduction
I. TMFs DATABASE OF UKRAINE

Database of 464 TMFs submitted to the Minecology dated by July 2019

GAPS
- TMFs accounting & statistical reporting
- dynamics of waste stored
Available data on:
- Commissioning year
- Date of last update by operator
- Waste type, volume & hazard class
- TPHI index & TMFs rank

Legend (industry):
- Coal (148)
- Oil and Gas (110)
- Metallurgical (58)
- Chemical (55)
- Energy (49)
- Other (44)
II. TMFs RESEARCH 2018-2019

The Dniester River Basin

GEF / UNDP / OSCE / UNECE Project
“Enabling Transboundary Co-operation and Integrated Water Resources Management in the Dniester River Basin”

Donbas conflict affected area

OSCE Project
“Assistance in the Donbas environmental monitoring system expansion”

Research of the TMFs current state in the Dniester River Basin 2018-2019

Research of the Donbas TMFs current state and their possible emergency impact on water bodies under the military actions 2019
TMFs IN THE DNIESTER RIVER BASIN

Project start - 6 TMFs
Project end – 32 TMFs
160 million tons of waste

- Oil-and-gas industry
  - 4 enterprises

- Energy industry
  - 3 thermal power plants

- Chemical industry
  - 5 enterprises
SULFUR ORE MINING AND CHEMICAL ENTERPRISE “SIRKA”

II. Dniester River Basin project

85 million tons of waste stored in inactive TMFs
sulfur ore mining waste and flotation tailings
1. TMF No. 1
2. TMF No. 2
3. TMF No. 3

Domino effect
Other waste facilities
4. Waste water pond
5. Phosphogypsum dump
6. Municipal waste
7. Sulfur dump
8. Acid tars
SULFUR ORE MINING AND CHEMICAL ENTERPRISE “SIRKA”

II. Dniester River Basin project
SULFUR ORE MINING AND CHEMICAL ENTERPRISE “SIRKA”

- Close to the transboundary river
  - Huge volume of toxic waste
  - Dam instability, leaks
  - No emergency response plans
  - No record keeping
  - Not closed, not rehabilitated

II. Dniester River Basin project

- Dam's slide failure
- Leaks from acid tars
- Plants filled by-pass
- Municipal waste
TMFs in the Dniester River Basin

Key recommendations on example of SIRKA enterprise

FOR TMF OPERATOR

- Develop the emergency response plan
- Strengthen the dam
- Liquidate and rehabilitate other waste facilities
- Ensure sewage treatment
- Control the technical state
- Monitor the environmental impact
- Proper record keeping

FOR COMPETENT AUTHORITIES

- External emergency planning - plan the emergency response especially in a transboundary aspect
- Waste decontamination/treatment
TMFs in the Dniester River Basin

TROUNSCBOUNDARY CO-OPERATION

**Inactive Oriana TMF issues**
- Leaks, dam instability
- Water and soil salinization
- Not closed, not rehabilitated
- No emergency response plans

**Abandoned TMF of Moldavian TPP**
- Water and soil pollution
- Impacts on the Kuchurgan water reservoir operation
- Not closed, not rehabilitated
- No payment of environmental tax
- No emergency response plans

DNIESTER COMMISSION

Dombrovskiyi flooded quarry

Moldavian TPP, view from TMF

! Transboundary Dniester River Basin
Dangerous substances may get in water bodies of Ukraine & Moldova
II. Dniester River Basin project

The Commission on Sustainable Use and Protection of the Dniester River Basin

! PREVENT THE TRANSBOUNDARY POLLUTION addressing TMF issues at the interstate level

The second meeting of the Dniester Commission, 4-5 Apr’19

Joint visual inspection of TMF of Moldavian TPP, 11 Oct’19

Joint site-visit to Oriana TMF, 5 Jul’19
II. Project in Donbas conflict affected area

**TMF selection criteria**

- **Waste:** toxicity and volume
- **Location:** proximity to the contact line and water bodies

**199 facilities**

- **931 million tonnes of waste**

**74 objects in the government-controlled area**

**Red - non-government-controlled area,**
**blue - boundaries of Siverskyi Donets river sub-basin**

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Project in Donbas conflict affected area

Avdiivka Coke Plant

- Produces 30 types of coke and chemical products
- Located in 5km area of contact line
- During conflict: more than 300 mines fell into the plant territory, 12 workers died
II. Project in Donbas conflict affected area

Avdiivka Coke Plant

2 TMFs, 7 mln. tonnes flotation tails chemical wastes

TMFs are inactive
4-6 km to Contact line
II. Project in Donbas conflict affected area

THREAT!
Storage pond’s dam collapse and settlement flooding (in 400 m) by highly mineralized treatment water

Avdiivka Coke Plant

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II. Project in Donbas conflict affected area

THREAT!

domino effect:
Waste fire outbreak of chemical TMF (1) and/ or waste heap (2) / SMW landfill (3)
- Produces chemical products from phenol and naphthalene raw materials
- Located in 5km area of contact line
- Direct visual observation of TMFs from non-government-controlled area
- Fire on TMF No. 1 in 2014
- Shell hit the TMF No. 3 dam in 2018
II. Project in Donbas conflict affected area

3 TMFs, 1 mln. tonnes of phenol and naphthalene production waste

1.7 - 2 km to Contact line

INOKOR & Co

Scientific and Manufacturing Association “Inkor and Co” LLC (SMA Inkor & Co)
II. Project in Donbas conflict affected area

THREAT!
Domino effect: dam collapse & rapid spread of pollutants:
1, 2, 3 - Inkor TMFs
4 - Dzerzhynska TMF settlements in 500-600 m

Narrow dam, strengthen by loam -> no access to the clay quarry

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II. Project in Donbas conflict affected area

TMFS SAFETY IN CONFLICT-AFFECTED AREA

MAIN POTENTIAL THREATS
- dam collapse
- waste fire outbreak
- domino effect

! Emergency risk at regional and transboundary levels
- dangerous substances may get in water bodies of Ukraine and Russia
- soil contamination
- atmospheric pollution

Work is ongoing, by the end of 2019:
- Methodological tools application
- Reports formation
- Research results presentation
CONCLUSIONS

based on Dniester & Donbas projects

! EMERGENCY PREVENTION POLICY !

- Emergency planning
  - both by TMF operators & Competent authorities
- Wireless early warning systems in case of emergency
- Waste decontamination/ treatment

Transboundary Impact --> address the issue at the interstate level

Search for technologies and funding sources
National & EU legislation

On waste

SEVESO III
Directive 2012/18/EC on the control of major-accident hazards involving dangerous substances

Directive 2006/21/EC
On the management of waste from extractive industries

Draft law "On waste management"

• Draft law amendments on high risk objects
• Draft law on accession the UNECE Convention on the Transboundary Effects of Industrial Accidents

Development of a legislative package on industrial waste
METHODOLOGICAL TOOLS of TMFs RESEARCH

Methodology for Comprehensive Evaluation of TMFs Safety
• UNECE Safety guidelines and good practices for TMFs
• Directive 2006/21/EC

Guidelines for determination of the main anthropogenic pressures and their impact on surface waters
• Water Framework Directive
• Driver – Pressure – State – Impact - Response

Checklist for contingency planning for accidents affecting transboundary waters
• UNECE Industrial Accidents Convention
• UNECE Water Convention

Impact on water bodies

Transboundary contingency planning
IMPLEMENTATION OF EU LEGISLATION

Directives: 2006/21/EC and SEVESO III

- Legislation development on industrial waste management and major accidents prevention
  - Industrial waste management plans
  - Environmental insurance
  - Enterprise Investment Funds
- Practical tools - adaptation of European methodologies
- Risk assessment - methodology development
- Strategy on industrial waste recycling and proper closure of inactive facilities
TMFs SAFETY IN UKRAINE
GOVERNMENT MANAGEMENT

CONCLUSIONS

COMPETENT AUTHORITIES

MINECOENERGY

STATE EMERGENCY SERVICE

TMFs accounting
Directive 2006/21/EC
Accident Prevention Policy
SEVESO III + UNECE TEIA Convention
Thank you for your attention!

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