THE MANAGEMENT OF HAZARDOUS MEDICAL WASTE 
IN 6 N-W REGION, ROMANIA

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Abstract: The paper work presents the evolution of the hazardous medical waste quantities managed between 2003-2005 in 6 N-W Region, resulted an important decrease of these quantities when was introduced the conformable management through following activities: selective collecting, transport, elimination, and payment of the services.

INTRODUCTION

The 6 N-W Region is located at the crossing north-south and east-west axis of East Europe, and it’s the entrance gate to Romania, from Hungary and Ukraine. The 6 N-W Region, is border on by W Region, at the south by Center Region and at the east by N-E Region. Is including 6 counties: Bihor, Bistrita-Nasaud, Cluj, Maramures, Satu-Mare, Salaj.

In 2002, the 6 N-W Region has 2,7444.008 inhabitants, the distribution was approximately uniform: 51% city, and 49% rural. The counties percentage into the Region population is not uniform, at the opposite poles, are placed the Cluj and Salaj counties.

Economically, the Region is organized around of three development poles:

I Place. Cluj-Napoca city, the second city after Bucharest in the national hierarchy.
II Place. Oradea and Baia Mare cities, which take over the intercounties positions.
MATERIAL AND METHODS

MEDICAL WASTE PRODUCED IN N-W REGION 2003-2004

In 6 N-W Region, were generated 1341 tones of medical waste in 2003, and 1019 tones of medical waste in 2004. At regional level can remark a decrease of the quantities generated in 2003 comparing with 2004.

Hazardous Medical waste management in 6 N-W Region 2003-2004

In 2003 - 2004 doesn’t exist an adequate system of a separately waste management [2],[4]. Hazardous medical waste generated in the region, were:

1. anatomic-pathological waste
2. pointing-cutting waste
3. infectious waste
4. chemical and pharmaceutical waste

ELIMINATION OF THE HAZARDOUS MEDICAL WASTE IN 6 N-W REGION 2003-2004

The incineration in existents no-conformable incinerators in counties hospitals:

The most of these incinerators were constructed more than 25 years ago, when the supervised incineration norms weren’t related with European norms [3],[5]. Ancient incinerators:
MEDICAL WASTE GENERATION STATE IN THE 6 N-W REGION - 2005

RESULTS AND DISCUSSIONS

ELIMINATION OF HAZARDOUS MEDICAL WASTE IN 6 N-W REGION-2005
Beginning with 2005, medical waste management in the region, improved as the consequence of:

1. Started to work of 2 incinerators at:
   - Cluj Napoca – conformable ecological installation for incineration of medical waste and hazardous waste belong to SC IF TEHNOLOGII SRL, removed-214 tones of medical waste
   - Oradea – waste medical incinerator MULER CP 100, capacity 100 kg waste/h, non-conformable, belong to CHILD HOSPITAL ORADEA, removed-200 tones of medical waste

2. Closing 17 incinerators from 39 of hazardous medical instal lation from the region, which are not appropriate for a new technology.

3. Elimination in non-conformable existsincinerators, in function, in Bistrita Nasaud, Maramures, Salaj and Satu Mare counties, of 509.9 tons hazardous medical waste.

MEDICAL WASTE MANAGEMENT IN CLUJ COUNTY-2005
Beginning with 2005 in Cluj county, was authorized the most modern ecological incinerator from Romania ECO BURN ROMANIA, belong to SC IF Tehnologii SRL.
Thus found an integrated system of hazardous medical waste management, provided a complete cycle of collecting and transport. The implementation \([3],[5]\) of the concordant administration of the dangerous medical waste and the increase of the generators responsibility in the application of this system results in:

- **minimization** of waste quantity generation from 1.4 t/day in 2004, to 1t/day in 2005
- **only 4 crematory service** on entire county area

![Comparative status in 2003, 2004, 2005 regarding waste management in 6 N-W Region](image)

**INCINERATION INSTALLATION**

**HOVAL GG24 Incinerator**

*Assure:*

- **elementary combustion at max. 1400C**, with results as: the organic constituents mineralization; disinfection by waste biologic-active constituents destruction; the elimination of the noxious by slag result from the passing into a gaseous state of the organic toxic constituents.
- **post combustion between 1100C and 1400C** with a stationary period of max. 4 sec., with results as: pyrolysis of the gases results from the elementary combustion; the elimination of the noxious by pesticides by destruction of the functional groups with toxic character; total destruction of the heavy aromatic and poly nuclear constituents; destruction of the natural and mineral burnt oils and the halogens organic substances.
- **filtration and permanent monitoring of the CO emissions**, temperature, pressure and powder

**Technical Characteristics**
Capacity: 550 kg/h

Constituents:

- automatically charging system;
- elementary combustion room (850°C);
- post combustion room (1400°C);
- heat exchanger;
- filtration and neutralization station;
- monitoring system
MEDICAL WASTE COLLECTING IN CLUJ COUNTY-2005
Distribution to the sanitary unity of the yellow PET bags, cartoon boxes and euro dustbins with the inscription “BIOHAZARD”

MEDICAL WASTE TRANSPORT IN CLUJ COUNTY-2005
Waste transportation on public roads is carried out in compliance with European Accord prescriptions concerning international dangerous transportation (ADR= Accord Dangerous Route), evolved by United Nation European Economic Commission Romania joined the Accord Dangerous Route in 1994. For hazardous waste transportation on public roads, ECO BURN ROMANIA uses Ministry of Environment and Water Management, Ministry of Transport, Ministry of Health, Civil Protection Inspectorate advised routes.

MEDICAL WASTE MANAGEMENT IN CLUJ COUNTY-2005
Collecting and transport are made with authorized packages according with MEC Order 221/2003, and the ECO BURN activity is supervised by ADR Group from SC IPROCHIM SA and RAR Bucharest.  
6 N-W Region Strategy concerning Medical Waste Management
Among the Romanian EU adhesion conditions are
- Medical waste elimination in European Directives conformable installation:
  - Authorized existing incinerators
  - Thermal sterilization installation
- To realize until 31.12.2008 new capacities of medical waste and hazardous waste incineration

CONCLUSIONS

Strategic approach of hazardous medical waste management in 6 N-W Region is based on setting up a suitable and unitary system of waste elimination installations, according with national and European provides [1], [10].

This system must to assure the waste elimination in entire Region and must to discharge the local purpose according with the geographical conditions and the necessity of typical installations from certain type of waste.

Thus according with National Strategy and National Plan [6], [7] of waste management, and with the Environmental Action Regional Plan Hazardous, [8] medical waste management in 6 N-W Region, provide:

1. Increase the incineration capacity of the medical and hazardous industrial waste ecological incinerator from Cluj County, to 10,000 tons/year;
2. Thermal sterilization

BIBLIOGRAPHY

1 Romanian Gazette No. 411 07/25/2001 – Law no. 426/2001 to approve OUG no. 78/2000 concerning waste management;
2 Romanian Gazette No. 659/05.09.2002 – HG no. 856/2002 concerning waste management and approval of the waste list, including hazardous waste;
3 Romanian Gazette No. 160/06.03.2002 – HG nr.128/2002 concerning waste incineration;
4 Romanian Gazette No. 386/06.06.2002 – Minister of Health and Family Order 219/2002 for Technical Norms approval regarding the medical activity waste management and data collecting Methodology in order to establish the national data base regarding waste resulted in medical activities;
5 Romanian Gazette No. 332/20.04.2005 HG no 268/31.03.2005 to complete and modify HG no.128/2002 concerning waste incineration;
7 The National Action Plan for the Environmental Protection
8 The Regional Action Plan for the Environment, 6 N-V Region
9 22 Environment Chapter - Statement Document
10 Implementation Plan for 2000/76/CE Directive concerning waste management