EuropeAid/137868/DH/SER/BY

Technical Assistance to Support to Effective Air Emissions and Radiation Monitoring, and Improved Environmental Management in Belarus (SAQEM)

The Project is financed by the European Union

Experience in harmonising Directive 99/13/EC in Bulgaria and IED's Chapter V in Serbia. Lessons learnt. Comparative analysis and recommendations to Belarus.

Anthony Tonchevski, Key Expert to SAQEM Project

1998-2000, Bulgaria

- **BG98 PHARE TWINNING –** Technical report on Task 4 “Solvents Directive”**, Contractor:** ADEME, France
- **DAC / OECD Project:** “Design of an integrated system for continuous monitoring and reduction of VOCs emissions from the use of organic solvents and the transportation of petrol in Bulgaria”, **Contractors:** National & Kapodistrian University of Athens, Dept. of Applied Physics, Terra Nova Ltd. **Beneficiary:** Executive Environmental Agency (EEA)-Bulgaria, **Coordinated by:** Hellenic Ministry for the Environment, Physical Planning & Public Works

2000-2013, Bulgaria

- **2000-2002,** Inventory of the VOC emissions in the scope of Directive 99/13/EC, assessment of possible actions to achieve compliance
- **2001,** Short-term technical assistance from EU under REAP Assignment BL-0081.00-06.01
- **2003,** Implementation Plan for harmonisation of Directive 99/13/EC as part of EU accession negotiations
- **2005-2006,** Preparation of 15 Sectoral Guidebooks on SMP
- **2008...** Implementation and enforcement...

Bulgaria 2000-2002
Inventory of the VOC emissions

2000, MoEW ordered preparation of an inventory of the VOC emissions within the scope of Directive 99/13/EC, assessment of possible actions to achieve compliance:

- Prepare a long-list of the companies – 2000+ units;
- Preparing a short-list of the companies and send them a simple questionnaire – 525 units;
- Analyse the filled questionnaires as well as the information of meetings with Ministries and Commerce Chambers and prepare a working list of 466 units (without street dry cleaning);
- Based on the analysis above list of typical measures to reduce VOC were prepared and general associated costs were estimated.

Bulgaria 2000-2002
Inventory of the VOC emissions...

The measures and costs were assessed referring to:

- Report of the Task Force on the Assessment of Abatement Options/Techniques for Volatile Organic Compounds from Stationary Sources, Rentz O, S. Nunge, M. Laforsch, T. Holtmann, IFARE, Karlsruhe, 1999
- Assessment of the cost involved with the Commision's draft proposal for a Directive on the limitation of the organic solvent emmisions from the industrial sectors
- Assessment of the cost involved with the implemejntation in France of the Commision's Directive on the limitation of organic solvent emmisions from the industrial sectors, ADEME, CITEPA
- The total investment cost estimated at **58.5 million Euro** and the operation cost at **6.6 million Euro per year.**

Bulgaria 2001
Short-term TA under REAP

- Project was funded by the European Commission under the PHARE REAP programme. The work was carried out by AEA Technology and Bulgarian contractors.
- The project aimed to develop 15 sector specific guidebooks for the implementation and enforcement of VOC management plans according to the requirements of Directive 1999/13/EC.
- Developed specific questionnaires and gather information about the current status in the use and management of VOCs to 15 pilot companies;
- Two pilot SMPs were prepared.

Bulgaria 2003 Implementation Plan

2003, MoEW ordered preparation of Implementation Plan for harmonisation of Directive 99/13/EC as part of EU accession negotiations, including legislation needed, institutional issues, cost, deadlines;

- The requested transition period was withdrawn;
- The nedotiations were finished successfully.

Bulgaria 2005-2006
Sectoral Guidebooks on SMP

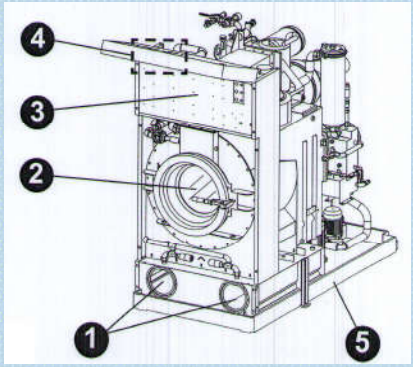
MoEW ordered to BIA the preparation of 15 Sectoral Guidebooks on SMP

- Each guidebook comprised a pilot SMP was based on real case.

Входящи и изходящи потоци на ОР[3]	Мярка	Количество
I_1 - Консумиран ОР	**kg**	**61500**
I_2 - Регенериран ОР	kg	0
O_1 Емисии на ОР от аспирацията	**kg**	**37600**
O_2 ОР в отпадъчни води (O2 =I1 – O6 – O7- O4)	kg	0
O_3 Загуби на ОР в продуктите	kg	0
O_4 – Общи емисии на ОР в работна/околна среда, загуби при аварии, текущ ремонт и други необхванати загуби на ОР	**kg**	**23900**
O_5 - ОР хим. реагирал/разграден	kg	0
O_6 - ОР в твърдите отпадъци (несъответстващ продукт)	kg	0
O_7 - Съдържание на ОР в състава на продуктите	kg	0
O_8 - Регенериран ОР използван извън процеса	kg	0
O_9 Други загуби на р-л	kg	0
Общо потребление и загуби на ОР = I_1 (I2 = 0)	**kg**	**61 500**
П - Броят на чифтовете обувки,произведени през 2003 г.		**966 500**
$E_{отн}$ - общи отнесени емисии на разтворители	**g за 1 чифт**	**63,6**

Bulgaria 2008-2013
Implementation and enforcement

- The Directive came into force October 2007;
- First official SMP Plans were prepared in 2008-2009;
- Both authorities and industry needed support from environmental consultants.



CE CONFORMITY DECLARATION

Union S.p.A.
VIA LABRIOLA, 4/D SALA BOLOGNESE (BO) ITALY
TEL. +39 (051) 6814996 / FAX +39 (051) 68146602

declares on its own responsibility that the machine

union CE
VIA LABRIOLA, 4/D - 40010 SALA BOLOGNESE (BO) ITALY
Tel. +39 51 6814996 - Fax +39 51 6814660

MODEL	XP 835	
SERIAL NUMBER	n°	668-D7-0561
YEAR OF CONSTRUCTION	2007	
MAX.LOAD CAPACITY	15	KG
SOLVENT TYPE	PERCHLORO ETHYLENE C2CL4	
SOLVENT LOAD	228 Lt	
VOLTAGE	400 V.	3~50 HZ
POWER	20,5 KW	42 A.
STEAM PRESSURE	4 ÷ 5	BAR
AIR PRESSURE	6 ÷ 8	BAR
WATER PRESSURE	2 ÷ 3	BAR
DYNAMIC CHARGE	1010	KG/m³
ELECTRIC PLAN	n°	8026 D

THE OPERATOR HAS TO CAREFULLY FOLLOW THE INSTRUCTION HANDBOOK FOR MAINTENANCE AND OPERATION

COMPLIES WITH THE FOLLOWING STANDARDS:
- European Directives
  Machinery Directive (98/37/EC)
  EMC Directive (89/336/EC)
  Low voltage Directive (73/23/EC)
  Physical Agents (Noise) Directive (2003/10/EC)
  Directive on the limitation of emissions of volatile organic compounds due to the use of organic solvents (1999/13/EC)
- Applied harmonized standards
  EN 292 Safety of machinery - Basic concepts, general principles for design
  EN 60204-1 Safety of machinery – Electrical equipment of machines
  ISO 8230:1997 Safety requirements for dry-cleaning machines using perchloroethylene

Name .....NORBERTO .....
Surname .....RAPPINI.....
Position ..... CHIEF MANAGER .....

SALA BOLOGNESE 12/04/2007

UNION S.P.A.
PRESIDENTE del C.d.A.
Rappini Norberto

НОЕ = Е/тегло на дрехите = 158 000г / 9,329 кг = 16,94 г/кг < 20

Serbia 2015
EuropeAid/131555/C/SER/RS

EuropeAid/131555/C/SER/RS – "Law enforcement in the field of industrial pollution control, prevention of chemical accidents and establishing the EMAS system"

- Report on the gaps for the full implementation of the requirements provided by Chapter V of IED.
- Report on the analysis of the compliance measures identified to close the gaps with Chapter V of IED, at operator's level

The necessary legislation was transposed 2 years ago with no action undertaken.

For the work had 40 workdays within 3 calendar months

Serbia 2015
List of the companies

- Preliminary list of the companies were prepared by local the Ministry comprising 157 companies which answered out of 5734 requested.

NR	Activities	Number of installations replied
1	Heatset web offset printing	8
2	Publication rotogravure	1
3	Other rotogravure, flexography, rotary screen printing, laminating or varnishing units , rotary screen printing on textile/cardboard	14
4	Surface cleaning using compounds specified in Article 59(5)*	3
5	Other surface cleaning	3
6	Vehicle coating and vehicle refinishing	7
7	Coil coating	2
8	Other coating, including metal, plastic, textile, fabric, film and paper coating	14
9	Winding wire coating	1
10	Coating of wooden surfaces	10
11	Dry cleaning	30
12	Wood impregnation	2
13	Coating of leather	0
14	Footwear manufacture	10
15	Wood and plastic lamination	2
16	Adhesive coating	6
17	Manufacture of coating mixture, varnishes, inks and adhesives	23
18	Rubber conversion	8
19	Vegetable oil and animal fat extraction and vegetable oil refining activities	6
20	Manufacturing of pharmaceutical products	7
	TOTAL NUMBER OF REPLIES	157

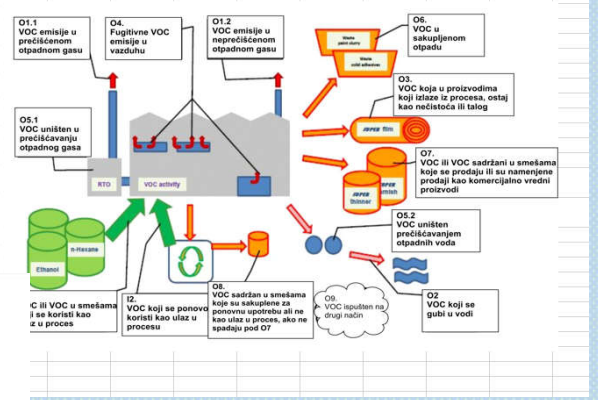
Serbia 2015
Collection of additional information

Three ways of information collection have been considered:

- develop and disseminate a questionnaire;
- searching for publicly available information;
- through direct contacts with stakeholders – site visits and meetings.

Serbia 2015
Questionnaire

	A	B	C	D
1		**Godišnji maseni bilans rastvarača (SMP)**		
2				
3		SMP obezbeđuje proračun fugitivnih i ukupnih emisija.		
4		SMP je potreban za potvrdu usklađenosti sa Poglavljem V Direktive o industrijskim emisijama.		
5		SMP treba da sadrži sledeće:		
6		SMP 2014	kg	t
7		Ulaz VOC u Aktivnost:		
8	I1	Ulaz nabavljenog VOC	34768	34.8
9	I2	Povraćeni i ponovno iskorišćeni VOC	0	0.0
10		Izlaz VOC (proizvodi, emisije idr.)		
11	O1	Emisije u otpadnim gasovima	2076.528525	2.1
12	O2	VOC koji se gubi u vodi	0	0.0
13	O3	VOC koja u proizvodima koji izlaze iz procesa, ostaje kao nečistoća ili talog	0	0.0
14	O4	Fugitivne emisije VOC u vazduh	0	0.0
15	O5	VOC koji sw gubi usled fizičkih ili hemijskih reakcija	26790.95321	26.8
16	O6	VOC sadržan u sakupljenom otpadu	0	0.0
17	O7	VOC ili VOC sadržani u smešama koje se prodaju ili su namenjene prodaji kao komercijalno vredni proizvodi	0	0.0
18	O8	VOC sadržan u smešama koje su sakuplene za ponovnu upotrebu ali ne kao ulaz u proces, ako ne spadaju pod O7	0	0.0
19	O9	VOC koji se ispušta na druge načine	0	0.0
20				
21		**Kalkulacija za proveru usklađenosti sa Delom 7 Aneksa VII Direktive o industrijskim emisijama.**		



Law enforcement in the field of industrial pollution control,
prevention of chemical accidents and establishing the EMAS system
EuropeAid/131555/C/SER/RS

ANNEX 1. QUESTIONNAIRE CONCEPT AND GUIDES FOR PREPARATIONS

1 Accompanying Letter content proposal

The letter should encourage and convince operators in the usefulness of their contribution to the tasks, so we should:

- explain that it is with regards to EU accession of Serbia;
- you need to harmonise your legislation with EU acquis;
- an important act of EU environmental legislation is the Directive 2010/75/EU;
- Chapter 5 treats the VOC emissions due to some specific activities using solvents;
- from the profile of your installation we assume that it falls within the scope of Chapter 5;
- in such a case you need to comply with the specific requirements of this chapter when Serbia access EU;

Serbia 2015
Results of analysed information

- 56 answers to Questionnaire (effectively 45 – 6 out of the scope and 5 dry cleaning)

Serbia 2015
Results of analysed information

- 9 installations were directly assessed to be in compliance;
- 3 installations needed additional review which has been done together the technology gap assessment procedure and the conclusion was they are either in compliance or out of the scope of chapter 5 IED in chapter 8;
- 17 are not in compliance.

Serbia 2015
Dry cleaning shops

Current ECSA /Exposition Service Contractors Association/ Nomenclature, generations	NR. Machines in Serbia	Legal compliance
1st generation	0	not in compliance
2nd generation	86	not in compliance
3rd generation	3	not in compliance
4th generation	125	Designed to enable user to achieve emission limits set by the EU-Dir1999/13
5th generation	1	Designed to comply with the 2nd BImSchV (German Emission Directive) of 1990.as well as limits set by the EU-Dir1999/13
6th generation	2	Highest level of emission reduction. Compliant by far.
TOTAL	217 of which: 89 incompliant and 128 with compliant equipment	

Serbia 2015
Technological gaps asessment

7. Coil coating		
AL PACK doo	**Tolminska 14, 24000 Subotica**	
Technological aspects	**Applied Technology**	**Technological Gaps/comments**
description of production practice techniques and technologies used;	The mixed paints and adhesives are used for painting / laminating aluminum foil on the machine for painting. The machine has 3 stations for painting and two tunnel sections, upper and lower, in which cures lacquers / adhesives applied to the foil in a continuous process. **capacity – 600 tones solvent/year**	Typical coil coating system
usage of conventional technology with high or with reduced (or free of) VOC content;	conventional technology with high VOC content of materials,	typical for this activity
capturing gases to be released in an organised way;	yes	16% fugitives - FELV is 10%
having system for treatment based on solvent recovery;	no	such techniques usually not used for this activity
system for treatment based on solvent destruction with/without heat utilization.	no	should have, e.g. incineration – thermal oxidation
Compliance	**Operators emissions**	**Chapter V requirements**
FELV plus ELV	fugitives are app 16% up to 1400 mg/Nm3	10% and 50 mg/Nm3
TELV	NA	NA

Serbia 2015
Assessment of the necessary measures and cost

Type of measures	Measures already planned or identified by operators	Recommended compliance measures
organisation, maintenance, renovations or housekeeping	-	measures to improve capturing and organising emissions
primary measures change in technology		-
secondary measures – treatment of emissions based on solvent recovery	Installing solvent recovery system. estimated at 3.000.000 Euro. Need 3 years to install. No necessary funds it would be possible about 2025	-
secondary measures – treatment of emissions through VOC destruction	-	incineration – thermal oxidation

AL PACK doo	Tolminska 14, 24000 Subotica	
Type of cost	**Value estimation**	**Specification**
Investment costs	800 000 Euro	thermal treatment system
Operation costs	80 000 Euro/year	thermal treatment system
Operation savings (minus cost)	0	Energy can be recovered from exhaust gases in some cases but this assumption is not considered here

Serbia 2015
Assessment of the necessary measures

No.	Operator's Name	Financial sustainability
1	ROTOGRAFIKA DOO	No needs of investments
2	V & B d.o.o. Subotica	No need for transition period
3	Papir Print doo Gornji Milanovac	No need for transition period
4	"COMEX" d.o.o Sabac	No need for transition period
5	Tipoplastika d.o.o Gornji Milanovac	No need for transition period with 30% Loan
6	AD ZA PROIZVODNJU I PROMET ORUŽJA ZASTAVA ORUŽJE, KRAGUJEVAC	No need for transition period
7	AL PACK doo Subotica	No need for transition period
8	PITURA D.O.O Zemun	No need for transition period
9	NEVENA COLOR D.O.O. Leskovac	No need for transition period
10	HEMPRO-COLOR DOO Sid	Loss-generated Under the present circumstances there are no possibilities to cover investment in compliance measures even in the case of transition period with loan.
11	Tigar Obuća d.o.o. Pirot	Loss-generated There is need for transition period. With 100% loan and investment postponed for period 2022-2025 operator can cover investment.

The Project is financed by the European Union

THANK YOU FOR YOUR ATTENTION!