



# Safety, Health and Environmental Annual Report 2008

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The mission of the JRC-IE is to provide support to Community policies related to both nuclear and non-nuclear energy in order to ensure sustainable, secure and efficient energy production, distribution and use.

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## Glossary

	<b>Dutch</b>	<b>English</b>
<b>BHV</b>	Bedrijfs hulpverlening	In-company Emergency Response Team
<b>CPR</b>	Commissie voor de Preventie van Rampen door gevaarlijke stoffen	Committee for the prevention of disasters by dangerous goods
<b>EHBO</b>	Eerste Hulp Bij Ongelukken	First Aid
<b>EMAS</b>	Eco-Management and Audit Scheme	Eco-Management and Audit Scheme
<b>EMS</b>	Milieu Management Systeem	Environmental Management System
<b>HFR</b>	Hoge Flux Reactor	High Flux Reactor
<b>HSC</b>	Commissie voor Veiligheid, Gezondheid en Milieu	Health and Safety Committee
<b>IE</b>	Instituut voor Energie	Institute for Energy
<b>INO</b>	Interne Noodplan Onderzoek Locatie Petten	Internal Emergency Plan Research Site Petten
<b>ISO</b>	Internationale Organisatie voor Standaardisatie	International Organisation for Standardization
<b>JRC</b>	Gemeenschappelijk Centrum voor Onderzoek (GCO)	Joint Research Centre
<b>KFD</b>	Kernfysische Dienst	Department of Nuclear Safety, Security and Safeguards
<b>NRG</b>	Nuclear Research and consultancy Group	Nuclear Research and consultancy Group
<b>OHSAS</b>	Handleiding voor het opzetten van een ARBOmanagementsysteem (vrij vertaald)	Occupational Health and Safety Assessment Series
<b>OLP</b>	Onderzoeks- en Bedrijven Locatie Petten	Research Location Petten
<b>PGS</b>	Publicatiereeks Gevaarlijke Stoffen	Publication Series for Dangerous Goods
<b>SES</b>	Veiligheid, Milieu en Beveiliging (Sector)	Safety, Environment and Security (Sector)
<b>SSO</b>	Veiligheidskundige	Site Safety Officer
<b>SOAT</b>	Systematische Oorzaken Analyse Techniek	Systematic Cause Analysis Technique
<b>TIP</b>	Technisch Informatie Pakket	Technical Information Package
<b>VOS</b>	Vluchtige Organische Stoffen	Volatile Organic Compounds
<b>VROM</b>	Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer	Ministry of Housing, Spatial Planning and the Environment
<b>Wmb</b>	Wet Milieubeheer	Environmental Management Act

## Introduction

This document is the integrated Safety, Health and Environmental Annual Report 2008 of the JRC Institute for Energy, Petten site.

This report describes the safety, health and environmental activities, targets and impacts as part of the management system in 2008 of the JRC-IE, for the Units located in Petten. The Renewable Energies Unit, part of the Institute located in Ispra (Italy), is excluded from this report, since its safety, health and environment related activities are managed locally by the Ispra Site Directorate. Where 'Institute' or 'IE' is used in this report it refers to the Petten site.

The research activities of the Institute are carried out under the 7th Framework Programme of the European Commission - the Non nuclear programme is valid from 2007 to 2013; the EURATOM nuclear programme is valid from 2007 to 2011. The Framework Programme is the legal basis for the work of the JRC and thus the Institute for Energy. It is voted by co-decision between Council and Parliament and is a political document identifying the main priorities.

Within the current Framework programme the activities for the Institute for Energy in Petten have not significantly changed. However there is an increase in the desk top type activity with the creation of a new unit which deals with the area of Energy Security.

Over the last couple of years environment, safety, health and well-being has received continuous attention and a high priority within the European Commission and the Institute for Energy. The Institute's Environmental Management System was implemented and certified in 2004. The development of a Safety Management System has been completed in 2008 to such an extent, that certification according to OHSAS standard 18001 is planned in 2009.

With these two management systems the IE is continuously striving to be a safe and environmentally friendly workplace for everyone on site and for its surroundings.

# SAFETY AND HEALTH

## Background

In 2006 the European Commission adopted the Decision (C(2006)1623) on 'Establishing a Harmonised Policy for Health and Safety at Work for all Commission Staff' to have a general and uniform approach in this area throughout the Commission.

In order to implement this Commission Decision, the IE has since then started to develop a Safety Management System, following the structure of the OHSAS 18001 (2007) standard. This standard is compatible with the ISO 9001 (Quality) and ISO 14001 (Environmental) standards, for which the IE already has certification.

In 2008 the Safety Management System has been completed to such an extent, that OHSAS 18001 certification is planned in 2009.

In this document, 'safety' is used in a broad sense, and thus it can be seen as a synonym to 'safety, health and well-being'.

## Inspections and audits

At the Institute, various inspections and audits were carried out by internal and external bodies and persons.

The Director, Heads of Unit, Safety-Environment-Security Sector and internal auditors are examples of the IE personnel involved.

Inspections and audits on JRC and EC level were performed on several occasions by the Medical Service of the European Commission (Luxembourg) and by the JRC Internal Audit Unit.

External inspections were carried out by the municipality of Zijpe and by other inspection services of Dutch national authorities. Inspection reports were always followed by action plans where applicable.

In 2008 the following inspections were performed related to safety (and environmental) matters:



	Number
<b>Internal inspections:</b>	
Safety and Environmental Unit Tours (inspection by Unit Head and Site Safety Officer)	9
Facilities for fire prevention, detection and fire fighting equipment (inspection by site fire brigade)	1
EC Medical Service	9
<b>External inspections:</b>	
Milieudienst Kop van Noord-Holland ( <i>Environmental Service of the Municipality Zijpe</i> )	7
KFD (VROM)	0
Arbeidsinspectie ( <i>Labour Inspectorate</i> )	1
Combined inspection by Milieudienst Kop van Noord-Holland / KFD / Arbeidsinspectie	1
<b>Internal audits:</b>	
Internal Audits (according to OHSAS 18001)	10
JRC Internal Audit Unit (audit of safety and environmental management at IE)	1

## Health and Safety Committee

The Joint Committee on Health and Safety (HSC) of the Institute is an advisory body on health and safety matters. It is composed of a Chairman, Deputy Chairman and 6 staff members and their replacements, nominated equally by the Local Staff Committee and the Director General. The Committee had 9 meetings in 2008.

The Committee has issued several Opinions and Notes in 2008 which are listed in the table below:

Document Nr.	Archive Nr.	Subject	Date of issue	Issued to
O 08-01	D(08)7132	Accident/Near Accident Reports and Follow-Up	14.03.2008	Director
N 08-01	D(08)10732	Implementation of the 2006 Commission decision – proposal by Director General	25.04.2008	Safety Adviser to Director General
N 08-02	D(08)26959	Monitoring staff feedback to the medical service at Petten	21.10.2008	Medical Service, IE/MSU

## Safety related training and instructions

The JRC-IE has organized internal and external safety related training for its staff in 2008 as shown below.

Course name	Duration	Nr. of participants
<b>Radiation Protection:</b>		
Radio Protection/Health Physics Courses (level 3)	1 day	1
Safe Handling with Radioactive Materials and Sources (level 5b)	3 days	3
<b>Emergency preparedness and first aid:</b>		
Freeing people from elevators	1 day	3
Incident investigation with SOAT	1 day	9
Team Leader Emergency Response Team	1 day	2
First Aid (EHBO) refresher course	10 hours	14
Emergency Response Team (BHV) refresher course	1 day	20
Introduction to small fire-extinguishing equipment	2 hours	35
<b>Security:</b>		
Bomb Threat exercise (for secretariats and post room)	2 hours	23
Series of lectures to raise security awareness (e.g. bomb alerts) among staff, jointly organized by the OLP companies/institutes	4x1hours	In total 800
<b>Management systems:</b>		
Auditor training ISO 9001	2 days	14

Auditor Training OHSAS 18001	1 day	9
Auditor Training ISO 14001	1 day	11
Accreditation of laboratories according to ISO 17025	2 hours	21
Measurement Uncertainty and ISO 17025	1 day	9
<b>Other:</b>		
Course for VOP (Voldoende Onderricht Persoon) in electrical installations	1 day	17
Defensive Advanced Driver Training	1 day	1
Legionella Prevention	2 days	1

Furthermore, each new staff member received general safety instructions from the Institute's Site Safety Officer (SSO) on their starting day using as a basis the film 'General Safety Regulations at the Research Location Petten'. This is followed by more detailed instructions on the Institute's Safety and Environmental Regulations within 6 weeks after their arrival. Job-specific instructions were given by the Unit/Sector to which they belong.

Contractors and external companies working at the JRC-IE received the document 'Safety regulations for third parties working at the JRC-IE Petten site' before starting any work. All external persons arriving to work on site either have direct supervision or have been shown the above mentioned film 'General Safety Regulations at the Research Location Petten' and are given job-specific instructions.

To keep staff updated and increase awareness, representatives of the SES sector provided information on safety related matters during Unit meetings. The SES also organised so called toolbox meetings to specific groups of staff members like laboratory managers.

## Operational emergency preparedness

To increase the emergency preparedness of all staff, as in previous years, evacuation exercises were held twice in all buildings. One environment related exercise was done to improve the cooperation between the in-company emergency staff (BHV) and the site fire brigade. This was at the same time the annual exercise in the framework of the site emergency plan (INO). For the Senior Management so-called 'Table-Top' exercises were organised by the SES sector, in order to train the Senior Management for their tasks during emergency situations.



As already mentioned under Training and Instructions, a series of lectures was given for all OLP staff (so called lunch colloquia) to raise security awareness e.g. in case of bomb alerts.

## Near accidents and accidents

Within the Institute we use an internal reporting system for near accidents and accidents. The purpose of this system is to get information on potential hazards and to improve the health and



safety situation continuously. Over the last three years no accidents with reporting obligation have occurred at the Institute.

#### *Near accidents reporting*

Main causes	2006	2007	2008
Organisational	16	11	17
Technical	24	17	17
Human	6	6	6
Total number of near accident reports	46	34	40

## **Work permits**

The work permit system is a tool to improve the safety and health of workers at work and it covers the following types of work and areas:

Controlled areas	All areas where special instructions based on the possible risks in this area are needed.
Excavation work	For work at which the knowledge of the existence of underground cables, pipes, drain system, etc. is essential.
Naked flame	For work involving the use of naked flame, or other activities involving the risk of fire, or work when dust is created which smoke detectors can see as smoke.
Confined space	Work in confined spaces such as pits, tanks, reservoirs, crawling spaces or spaces with inadequate or no ventilation.
Working on height	For work on height >2.5 m where there is a risk of falling or of falling subjects and for activities that can cause falling like opening floors.

The following work permits were given out:

Type of work permit	2006	2007	2008
Controlled area	5	5	13
Excavation	24	15	20
Naked flame	83	42	27
Confined space	12	6	5
Working on heights	35	55	87
Total	159	123	152

Note that some work permits cover more than one day. The number of work permits per year depends on the kind of activities going on at the Institute.

## Radiological workers

About 20% of the Institute staff is registered as radiological worker. The measurement and registration of their exposure to ionising radiation is contracted to NRG. All doses were well below the legal limits as defined in the Council Directive 80/836/Euratom and amending Directives.

The table below shows the data of the cumulative doses. It includes the dose of external staff. About one third of the radiological workers has an annual dose limit of 6 mSv and two third of 20 mSv. For comparison a non-radiological worker (citizen) has an annual dose limit of 1 mSv.

Table Dose of exposed people

Year	Dose (mSv)		Number of persons			
	Cumulative	Average	Total	< 1 mSv	1-6 mSv	6-20 mSv
2006	11,25	0,20	55	54	1	0
2007	6,57	0,12	54	54	0	0
2008	8,15	0,14	57	57	0	0

## Health related activities

The staff members of the Institute are under the supervision of the Medical Service of the European Commission. In 2007 an additional company doctor was contracted and consequently the frequency of site visits has increased significantly in 2008. One task of the company doctor and his staff is to perform the annual medical examinations of all staff; another one is to advise on work related matters. In this advisory role inspections of working places were carried out.

Since the opening of the gym in 2006, an increasing number of staff members have been making use of this facility. In 2008 about 30% of the Institute staff members were following classes. These classes are under supervision of a qualified instructor, contracted for 480 hours. All gym activities take place outside core hours.

# ENVIRONMENT

## Background

The Environmental Management System (EMS) has been built up according to ISO 14001. It has been implemented and certified in 2004 and has been developing ever since. In 2008 several improvements have been made to the system. The EMS is audited internally and externally every year, and no major deviations or non-conformities were found. The licence requires a certified environmental management system conforming to ISO 14001.

The current certification is granted by TNO Certification.

## EMAS

EMAS stands for "Eco-Management and Audit Scheme" and is a voluntary scheme for organisations willing to commit themselves to evaluate and improve their environmental performance. The JRC has indicated that it would like all sites to register for EMAS by June 2010. Prior to this registration all sites should be ISO 14001 certified. The Institute for Energy has been certified for some years now and will continue to improve in this area. The additional registration to EMAS will impose few changes in our way of work and we therefore do not foresee any difficulties.



## Inspections and audits

The IE has an audit programme covering a period of three years. In this programme it is defined which areas of the environmental licence are covered during the internal and external audits and inspections.

Internal audits are performed on Institute and DG JRC level.

External audits are performed by a certification body. A periodic audit was carried out by TNO Certification in March and November 2008. These two audits resulted in one minor finding, which was related to the formulation of environmental targets. Necessary actions have been taken, and the finding is closed.

Inspections were performed together with experts from different authorities. The results of these inspections are taken up in action plans. The progress of these action plans are reviewed periodically.

In 2008 the following audits and inspections were performed related to (safety and) environmental matters:

	Number
<b>Internal inspections:</b>	
Safety and Environmental Unit Tours (inspection by Unit Head and Site Safety Officer)	9
Facilities for fire prevention, detection and fire fighting equipment (inspection by site fire brigade)	1
EC Medical Service	9

<b>External inspections:</b>	
Milieudienst Kop van Noord-Holland ( <i>Environmental Service of the Municipality Zijpe</i> )	7
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<b>Internal audits:</b>	
Internal Audits (according to ISO 14001)	10
JRC Internal Audit Unit (audit of safety and environmental management at IE)	1
<b>External audits:</b>	
External Audit by TNO Certification	2

## Environmental licence

The environmental licence was granted in 2005. Since then experience has been gained on its the practical implementation. The activities of the institute are also evolving. Therefore from time-to-time updates or additions are needed. A licence change (date 4 April 2008) was approved following a request by IE in 2007 concerning two licence requirements: one on the determination of the amount of waste water disposed off to the sewer, the other on the storage of substances reacting violently with water. In both cases alternative but more practical measures are available that equally meet the goals of the licence requirements and these measures are now part of the licence.

The new licence also incorporates earlier Wmb 8.19 notifications\* with respect to changes in laboratory installations and the maximum pressures and temperatures allowed. The TIP notification\*\* for the Reformer room (submitted in 2007) was accepted and later in the year another Wmb 8.19 notification (hydrogen autoclaves) was filed and accepted.

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\* Wmb 8.19 notification: procedure for change of situation which is not covered by the limits and the requirements of the licence but does not lead to negative effects on the environment.

\*\* TIP notification: procedure for change of situation which is covered by the limits and the requirements of the licence

## Environmental incidents, significant malfunctions

In 2008 there were no environmental relevant incidents or malfunctions of installations to be reported.

## Environment related goals

Long-term environmental targets and goals had been defined in the IE Environmental Programme 2006-2008. The specific goals for 2008 had been fixed in the Environmental Annual Plan.

<b>1</b>	<b>Awareness and risk assessment</b>
1.2	<i>Information to all staff</i>
	Bring licence requirements sorted by topics to the attention of concerned staff members: mostly direct contact with individual staff, sometimes information to larger groups e.g. laboratory managers.
	Address all staff on environmental issues in 2 unit meetings per year: part of the general presentations at unit meetings concerning QSE
1.3	<i>Information to external parties</i>
	Ensure that third parties receive all relevant environmental instructions of IE: environmental instructions are part of "Safety regulations for Third Parties", distribution is registered.
	Monitor if environmental instructions are followed: regular walk-about.
<b>2</b>	<b>Collection, separation, storage, removal and reduction of waste</b>
2.1	<i>Review the waste management and waste disposal process</i>
	Give information on collection, separation, storage, removal and reduction of waste to all staff: concentrated on paper use: default double sided printing, separate collection.
	Review waste management and waste disposal contracts to evaluate possibilities to reduce waste: postponed as the present contract was prolonged and up for renewal in 2009.
2.1.4	<i>Improve the possibility to take samples from the sewerage system in laboratories.</i>
	Implement the defined new sampling points: postponed, not needed for 312 because of separate waste water collection from laboratories.
	Define a list of the most used heavy metals. Prepare an instruction to reduce the use of heavy metals and when used how to separate them effectively: postponed.
<b>3</b>	<b>Consumption of natural resources</b>
3.1	<i>Reduce consumption of natural resources</i>
	Perform an energy scan which should show possibilities for reducing water and energy consumption. Prepare follow-up of actions: increase the number of network printers as much as possible, implementation of a virtual server concept
	Evaluate the large-scale consumption installations on site: separate meters still being installed.

For the period 2009-2011 a new Programme with long-term goals has been created, with specific actions and grouped in six environment related focus areas. The actions in the Plan for 2009 cover the following four focus areas:

Collection, separation, storage, removal and reduction of waste

- Review waste management to evaluate possibilities to reduce waste and conclude new contract waste removal

Implement energy saving measures

- Implement energy efficient lighting in building 314
- Improve the heating installations of 113 (replacement by high efficiency boilers) and 314 (integrated heating and ventilation control)

- Study the actual needed amount of ventilation flow (update needed because the original purpose of rooms has changed e.g. from laboratory to office)
- Repair/replace compressed air pipe network
- Migrate to virtual server technology (ongoing action over several years)

Improve monitoring of energy and water usage

- Make gas and water monitoring per building possible

Recertification for ISO 14001

- Obtain recertification for ISO 14001 in May 2009

## Nature Management

The Petten site is surrounded on three sides by a natural reserve which has been designated as NATURA 2000 area by the Dutch authorities. The four site organisations (JRC-IE, ECN, NRG and Covidien) started in 2007, together with the external company ARCADIS, with the development of a nature management plan for the site. The goals are to improve the quality of the nature within the site, to establish a common understanding with the authorities on the management of the nature on site, to prepare our contribution to the management plan of the Province and to promote the Petten site, showing that we respect nature.



*The High-Pressure Tank Testing Facility integrated into the landscape*

# ENVIRONMENTAL IMPACTS

## Energy use

Table Consumption of gas and electricity

Year	Gas (m <sup>3</sup> ) (excl. HFR)	Gas CO <sub>2</sub> emission (tonnes)	Electricity (kWh) (excl. HFR)	Electricity CO <sub>2</sub> emission (tonnes)	Nr. days with temperature < 0°C
2006	455 356	811	2 804 447	1587	62
2007	439 594	782	2 908 900	1646	37
2008	473 946	843	2 491 086	1437	58

The figures shown in the table indicate the total amount of used energy in the Institute. The fact that the Institute has undergone major changes because of building renovations, makes it difficult to indicate the causes for the consumption changes between the various years.

The use of so-called 'graaddagen' for comparison of energy consumption is at the moment not meaningful, since no strict separation can be made between energy consumption used for processes and for utility purposes.

## Air

The emissions to air originate mainly from test facilities in laboratories. These emissions are very low and where possible the laboratory managers are informed of ways to reduce the amount of emissions. In 2008 there were no emissions of substances to air above the legal limits.

### Volatile Organic Compounds

The used amount of VOS in 2008 was 60 litres, which is comparable with the used amount in 2007 (43 litres). Due to the fact that these substances are used for cleaning purposes and not in processes, it is obvious that the major part (>90%) is vaporized and emitted to air. Only a small amount (ca. 2ltrs) was disposed as liquid chemical waste.

### Cooling installations

As in previous years the maintenance of all cooling installations was outsourced to a certified external company. Part of this maintenance contract is the leak test and the advice to replace installations at the end of their technical lifecycle.

In the reporting year 2 installations with the coolant R22 were dismantled. The nominal amount of R22 of these 2 installations was 32,2kg. Due to loss of coolant by maintenance and leakage only 20,5kg was retrieved for recycling. This loss of R22 corresponds to emission of 20 tonnes CO<sub>2</sub>.

The total amount of R22-containing air conditioning units is reduced at the Institute to 20.

## Waste

Glass, wood, paper, small chemical waste, chemicals and metal are collected internally at the Institute. Various certified external companies specialized in waste treatment take care of the proper disposal and the recycling of valuable materials.

The Institute donates empty cartridges to charitable organisations.

Old scientific equipment is often made available to high schools for scientific and education purposes.

Packaging material, like foam chips, is removed from incoming packages and reused (about 1.000 litres in 2008).

Wood from different kind of transport packages is reused to make new containers for transport of material and equipment.

Table Type of waste by volume or weight

Type of waste	2006	2007	2008
	Amount (kg)	Amount (kg)	Amount (kg)
Household waste	111360	96000	108680
Paper and cardboard	14292	28780*	9820
Wood	7200	4200	4200
Glass	250	1260	0**
Metal	2400	15000	2200
Small chemical:			
Batteries	60	70	110
Cartridges	45 pieces	40 pieces	0**
Laboratory mixed waste	275	298	0**
Oil filters; oil containing products	13	10	0**
Spray containers, paint	15	22	0**
Developer	0	980	0**
Oil	22	50	0**
Medical waste	20	4	17

\* Prior to the renovation an initiative was taken to reduce the amount of paper in the central archive. Also staff members were requested to dispose of as much paper as possible before moving to their new/temporary offices, which resulted in a higher amount of paper that was disposed off in 2007.

\*\* This waste was collected on site, disposal will take place in 2009.

## Water

The consumption of water in different buildings was measured. However, for the facilities/laboratories in these buildings it is not reasonable to split the water consumption between household water and process water because the water consumption for processes is very low.

The FCTEST facility is the only facility which has a substantial consumption of water in the work process and is located in building 310. The facility has no separate measurement point, so it is not possible to divide the household water from the process water.





Due to renovation works, building 308 was not in use for a large period in 2007. Temporary building 330 had taken over the function of building 308 and was removed in 2008.

Table Water consumption in m<sup>3</sup>

Building	2006	2007	2008
Total	4575	4407	3849
113	39	51	45
300	239	174	30
308	348	142	267
309	129	340	236
310 (incl. FCTEST)	1188	982	1786
311	0	1	4
312	740	675	534
313	85	51	210
314	127	144	65
315	138	114	95
320	23	17	37
325	145	184	130
330 (temporary offices)	323	283	4
Construction site	144	366	4
Fire extinguishing water	907	884	402

### Emission to water

The discharge of water to the sewers equals the consumption of water plus the water produced and discharged to sewers by the FCTEST facility, minus the water collected from the chemical laboratories in 312 (this building has an additional collection circuit for waste water from the laboratories).

The FCTEST facility produces water and discharges a part to the air:

Water produced and discharged to sewage: 288m<sup>3</sup>

Water produced and discharged to air: 5.2m<sup>3</sup>

(The amounts are estimates based on the running hours of the installation.)

The waste water from the chemical laboratories in 312 is collected in separate tanks. These are emptied by an external certified company. The total amount of water taken away in 2008 was 14.5 m<sup>3</sup>.

The total amount of water discharge into the sewers was therefore  $3849 + 288 - 14.5 = 4122.5\text{m}^3$

This amount is below the amount allowed according to the licence.

The water is not cleaned before discharging as there is a separate system for the water from the chemical labs. Seen the present activities at the Institute, the amount of solid particles in the water are very limited. The drains contain separator systems to prevent deposits being discharged with the water.

The release of heavy metals and relevant inorganic emissions to the drain system is given in the table below. The measurements are performed by one external company for all the Petten site organisations at different locations within the ECN part of the site where these drains all get together. The drain system has been changed in 2008 so it is now possible to measure the contribution for JRC-IE buildings falling under the environmental and waste water licences separately, before that the measurements also included the waste water coming from the HFR. Now there are separate measurements for the HFR and JRC-IE, but the combined measurements for 2008 give results comparable to those of previous years.



Table Release of heavy metals to the drain system

Metal	Concentration (mg/m <sup>3</sup> )		
	2006*	2007*	2008
Cadmium (Cd)	< 0.4	< 0.4	<1
Chromium (Cr)	< 5.0	< 5.0	<5
Copper (Cu)	64	51	120
Nickel (Ni)	< 5.0	< 5.0	<10
Lead (Pb)	< 5.0	< 5.0	<8
Zinc (Zn)	110	69	110
Mercury (Hg)	0.24	< 0.1	<0.1
Arsenic (As)	2	< 2	<10

\* Including waste water from the HFR

Table Inorganic emissions to the drain system

Substance	Concentration (g/m <sup>3</sup> )		
	2006	2007	2008
Chloride(Cl <sup>-</sup> )	180	290	210

## **Soil**

Considering that the soil investigation campaign of 2004 showed a generally good quality of the soil in the area of the Institute (apart from the two locations where we intervened), no further actions have been taken on this issue.

An underground buffer tank for compressed air was decommissioned. The tank could not be removed due to the vicinity of walls, cables and pipes. Instead it was decoupled, opened, cleaned and filled with sand.

## **Storage of dangerous substances and gases**

The chemicals and gases are stored according to the CPR 15 and the environmental licence. The capacity has not changed significantly during 2008. The storage facilities are maintained according to schedule.

IE has been in consultation with the Municipality to transfer from the CPR to PGS standard and has asked a revised deadline for the transfer on the grounds that both guidelines provide similar protection. This delay was granted, the transfer has however not yet been completed in 2008.



## **European Commission**

### **EUR 23927 EN – Joint Research Centre – Institute for Energy**

Title: Safety, Health and Environmental Annual Report 2008

Editors: J. de Haas, T. Timke, E. Hoogkamer

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2009 – 18 pp. – 21 x 29.7 cm

EUR – Scientific and Technical Research series – ISSN 1018-5593

#### **Abstract**

The Safety, Health and Environmental Annual Report 2008 describes the health, safety and environmental activities, targets, impacts and management system of the JRC Institute for Energy in Petten.

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