



# Annual Environmental Report 2006

Hoboken





**Dear Neighbour,**

The purpose of this report is to provide you with a detailed description and explanation of the key environmental issues associated with our industrial activities in 2006. We feel that this is important as we value our relationship with you and are of the opinion that dialogue with you is essential.

We were, therefore, extremely pleased with the numerous reactions to the survey that formed part of this report last year. The results were predominantly positive although this does not mean that no points were raised that required attention. Later on in this report we look at the results of the survey and the subsequent action taken.

**What were the most important events in 2006?**

The start of the remediation of the

## Environmental Report 2006



Moretusburg residential area was undoubtedly the main event in 2006. We are delighted that, together with the authorities, we are able to rectify the environmental consequences of 120 years of industrial activities. Nevertheless, we are aware that the excavation work entails inconvenience and can cause emotions to run high. We expect the work to go smoothly and be completed as planned. We hope, above all, that it will bear clearly visible fruit in the long term in the form of a further decrease in the lead-in-blood levels of the children in the area.

Meanwhile, modernisation of our plant continues. Additional measures have been taken in order to prevent dust formation. These have resulted in a further reduction in guided and diffuse emissions (the latter are dusts and gasses which are released not via stacks but during our production processes and logistical operations).

The substantially reduced emission of lead and

selenium is particularly noticeable. Umicore undertakes to do even more in this area to ensure that this improvement will continue in the years to come. This has been agreed on with the authorities.

Finally, important investment decisions were taken in 2006 that will have a positive impact on the environment and the appearance of the plant. These are explained in brief at the end of the report.

All these efforts have only one purpose: maximum reconciliation of our industrial activities with the area and the environment. We know that this work is far from finished and probably never will be. But the improvements made are a stimulus to do even more and even better!

*Best regards,*

Jan Kegels  
Department head Environment

Hugo Morel  
Executive Vice President

# Your opinion is important...

The survey included in the previous annual environmental report was designed to ascertain your opinion of our environmental policy and our communication relating to it. We received a large number of reactions, 298 to be precise!

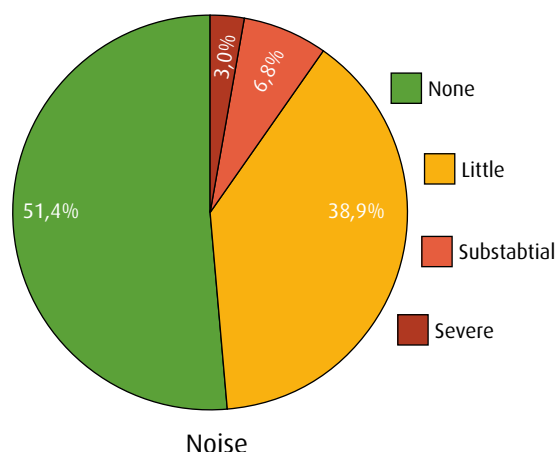
Most reactions came from the residents of the Moretusburg, Hertogvelden, Vinkevelen and Nachtegalenhof areas of Hoboken (between 15% and 25%) but we also received a large number of reactions from our neighbours from Hemiksem (North) and Kruibeke (East)(7.5%).

What stood out immediately is that 87% of the respondents think that the environmental achievements of Umicore have improved in the past three years. 96% acknowledge that the appearance of the plant has also improved during that time. This is good to hear because it shows that all our efforts have not been in vain and have produced positive results. However, complaints were also received, although we do notice a substantial fall in their number.

## Noise

10% of the respondents from Hertogvelden, Vinkevelen and Nachtegalenhof experience substantial (7%) to severe noise hindrance. In Moretusburg this is "only" 2%. This may be related to the fact that the noise improvement plan carried out in 2002-2003 mainly impacted on Moretusburg, where the difference can clearly be heard. The following three projects will also have a positive impact on noise:

1. The shutting down of the current Precious Metals Concentration Plant (PMC) in 2008 and



Noise

the construction of a new PMC Plant more centrally located on our site. The distance from the residential areas will therefore increase, which will have a clearly detectable impact on Vinkevelen.

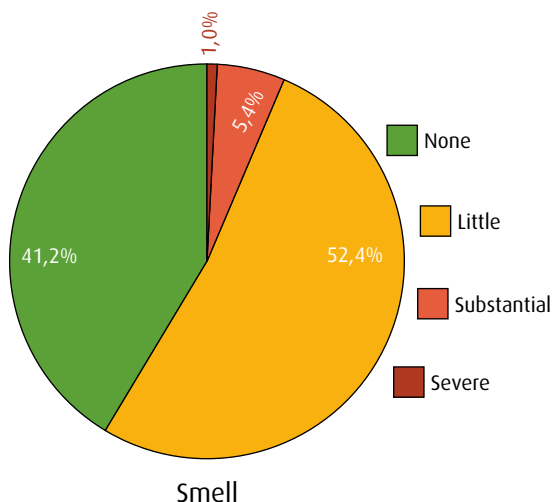
2. The completion of the noise barrier. This will mean less noise for the Nachtegalenhof area as from 2009 on.
3. The investigation of all our noise sources and their impact on the surrounding area. We may be able to take new measures based on the results of this study.

The survey has revealed that residents from Hemiksem and Kruibeke experience substantial disruption from noise (22%). This is strange, given the greater distance from the plant. It cannot be ruled out that other sources of noise also play a

role here. This will certainly be looked into during this investigation.

## Smell

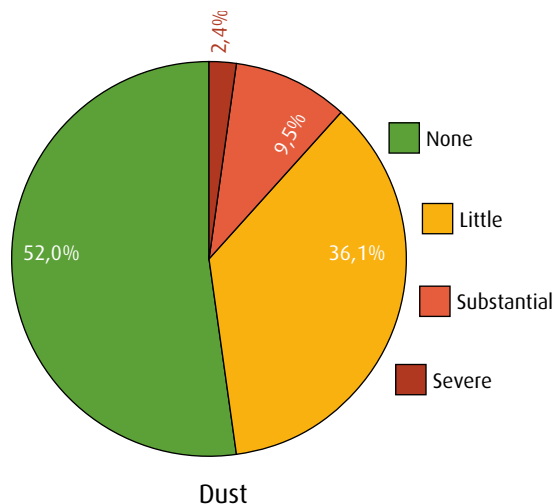
6% of the respondents to our survey say that they experience substantial nuisance from smell. However, an investigation into smells in 2001-2002 shows that Umicore does not systematically cause any smell nuisance, nor could any major sources of smell be established. It is therefore important that you react immediately via our freephone number (0800/93 7 39) if you are experiencing any smell nuisance. We can then come and assess the situa-



tion and hopefully discover the source of the smell, whether it is inside or outside the plant.

## Dust

12% of the respondents to our survey experience substantial nuisance from dust. In Hertogvelden, in particular, (27%) and to a lesser extent in Moresburg, Vinkevelen, Hemiksem, Kruikeke (+/- 11%) and Nachtegalenhof (4%). In the section on "air" we tell you how, by means of spraying, cleaning, covering and adjusting



our processes, we do our best to prevent dust formation. One of the forthcoming projects is the replacement of the lead refinery's burners. The new plant will run on natural gas instead of heavy fuel, the black smoke plume coming out of the lead refinery's stack will be a thing of the past.

However, a study shows that Umicore is only responsible for a limited amount of the dust in the air in the area. This does, of course, refer to dust in general and not metals in this dust, where the connection with our company is clear.

## Communication

More than 95% of the respondents feel that this environmental report contains useful information. In addition, 90% of them think that Umicore communicates openly to very openly.

Around 3% are of the opinion that Umicore does not react correctly to complaints. Although this is only a few people, we strive to get everyone's confidence.

The survey form provided space for extra comments. One in three respondents made use of this.

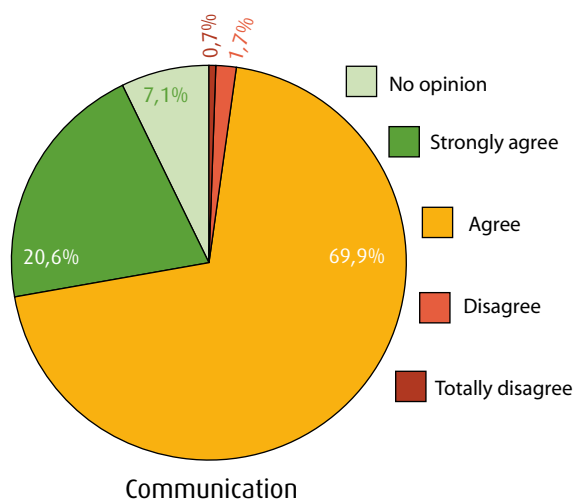




Sometimes these comments were critical. It was suggested, for example, that the concrete walls be brightened up. Questions were asked about people growing their own vegetables in their garden or there were complaints about smell and noise. When a complaint was formulated we contacted the respondent, if name and telephone number were known, in order to answer their question or respond to their comment.

We also received a large number of encouraging comments, a heartfelt 'congratulations' or 'continue the good work'. Someone commented that 'during recent years Umicore has proved that trade and industry do not necessarily have to be the environment's natural enemies.' This is exactly what we wish to stand for.

We would like to thank everyone who took part in this survey and plan to carry out a similar survey among the local residents next year.



## Emissions

‘Historically low lead and selenium emission’

By emissions we mean the amount of dust or gas released into the atmosphere. Guided emissions are dispersed via a stack. Diffuse emissions are all other dust or gas that escapes from buildings or is blown about during the transfer, storage or transportation of raw materials.

### Guided emissions

#### Sulphur dioxide

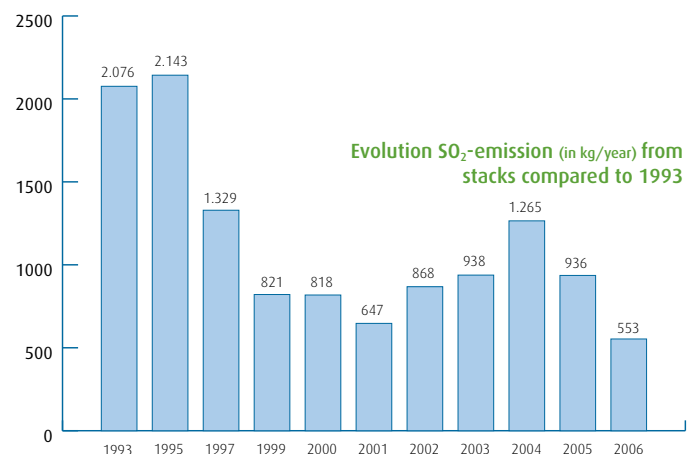
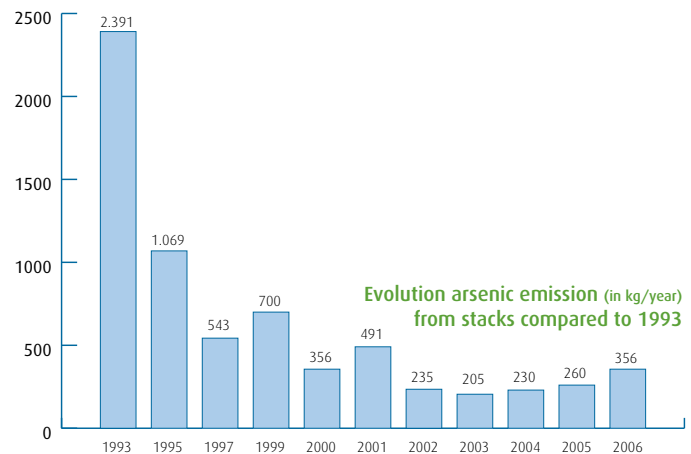
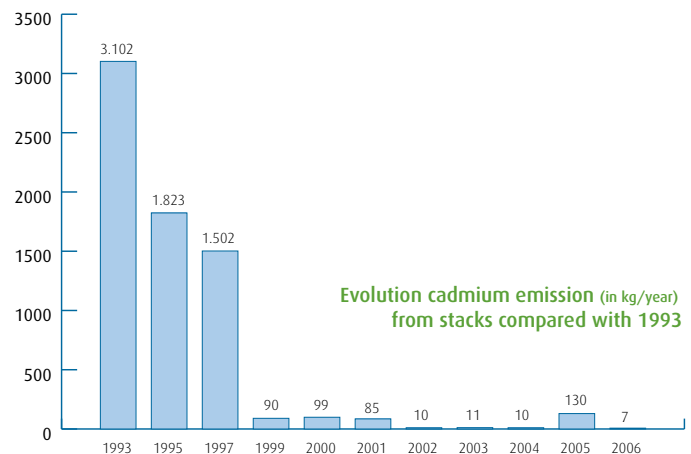
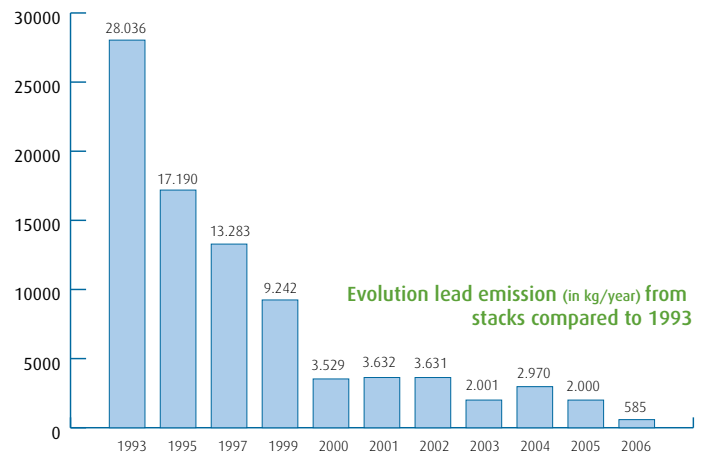
The sulphur dioxide ( $\text{SO}_2$ ) produced in the Smelter is converted into commercial sulphuric acid in the Sulphuric Acid Plant. In 2005 the Sulphuric Acid Plant was fitted with double absorption, which improved efficiency even further. In 2006 too, substantially less sulphur dioxide was released even though the Smelter processed more raw materials.





## Metals

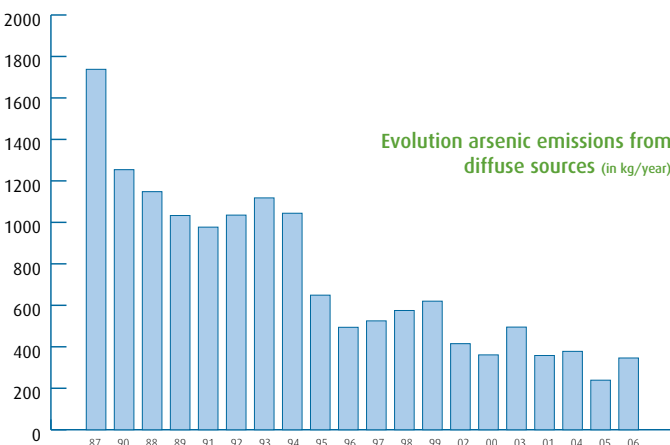
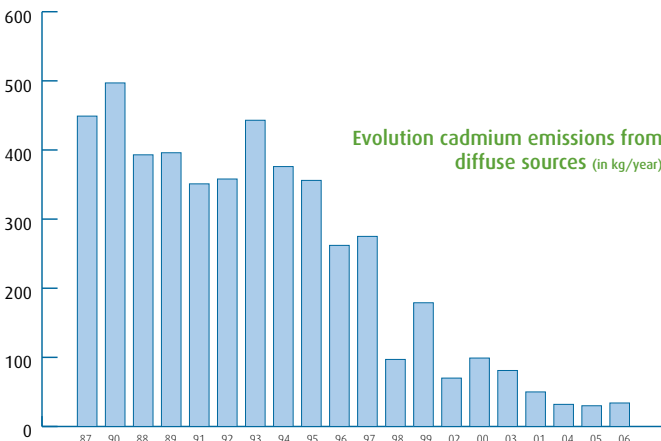
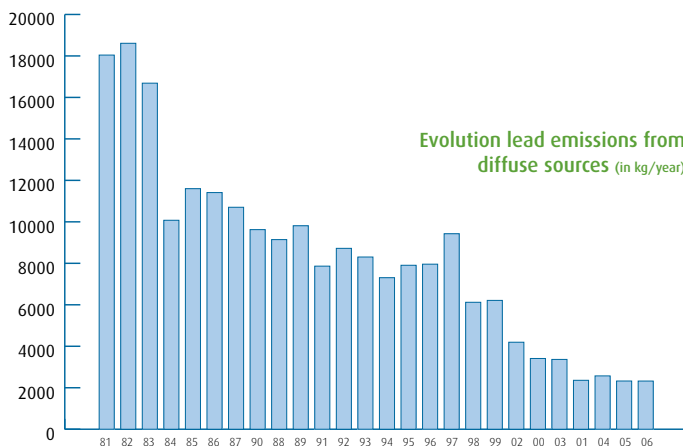
The emission of metal dust via our stacks fell substantially in 2006. We noted historically low values for lead and selenium. This is due mainly to improved gas purification of the Precious Metals Concentration Plant. However, we see an increase for arsenic. We are therefore carrying out improvements to our blast furnace. In the case of cadmium we once again note a decrease after the exceptional increase in 2005, which was due to the temporary functioning problems of the Smelter's gas purification system. The substantially reduced cadmium levels prove that this is now completely under control.







Wind screen by Greinerstraat



## Diffuse emissions

Diffuse emissions are mainly the result of dust blowing about during the transportation or transfer of raw materials and intermediate products. Wind speed and direction are decisive factors. Although it is difficult to measure these emissions precisely, we have developed a method for estimating them based on measurements obtained by Umicore and the authorities at the various measuring points in the area.

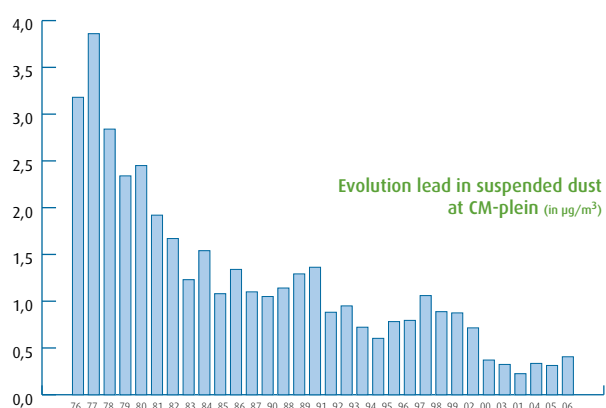
In spite of increased plant activities in 2006 the results for lead, cadmium, zinc and copper are the same as for 2005. However, after a substantial fall in 2005, an increase was once again noted for arsenic in 2006 (level comparable to those of 2003 and 2004).

We continue to aim for further improvements by applying specific measures, such as erecting wind screens in storage areas and using a fog cannon when dusty materials are being handled.

# Immissions

'Dioxin deposition has decreased further and is to be regarded as "non-elevated"'

By immissions we mean the quantities of dust present in the environment, such as dust suspended in the air and falling, coarser dust that falls on the ground..



Umicore's immissions are measured intensively on and off site by both Umicore and the authorities Vlaamse Milieu Maatschappij (VMM) (Flemish Environment Agency).

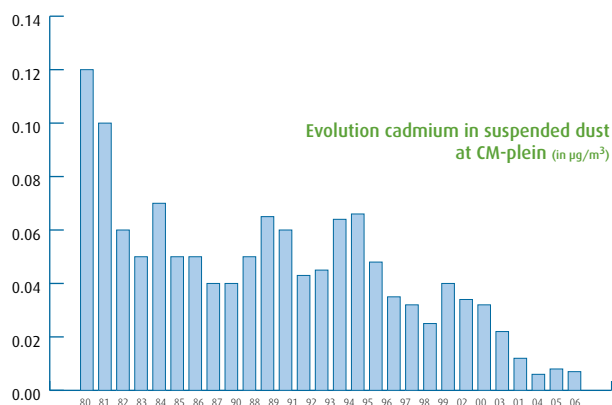
## Suspended dust

The figures show the evolution of lead, cadmium and arsenic in the suspended dust measured by Constantin Meunierplein (CM-plein).

We note an increase for lead and arsenic compared with in 2005 while a slight decrease is noted for cadmium.

At CM-plein an increase to an annual average of  $0.41 \mu\text{g}/\text{m}^3$  lead and an annual average of  $0.12 \mu\text{g}/\text{m}^3$  for arsenic are noted (no standard). The measured concentrations for cadmium fall to an average of  $0.007 \mu\text{g}/\text{m}^3$  at CM-plein (in  $\mu\text{g}/\text{m}^3$ ) so that we are substantially below the standard of  $0.040 \mu\text{g}/\text{m}^3$ .

The average concentrations of PM 10 dust, which is dust that is smaller than one hundredth of a millimetre, at CM-plein were  $0.22 \mu\text{g}/\text{m}^3$  for lead (below the standard of  $0.50 \mu\text{g}/\text{m}^3$ ),  $0.006 \mu\text{g}/\text{m}^3$  for cadmium and  $0.06 \mu\text{g}/\text{m}^3$  for arsenic.

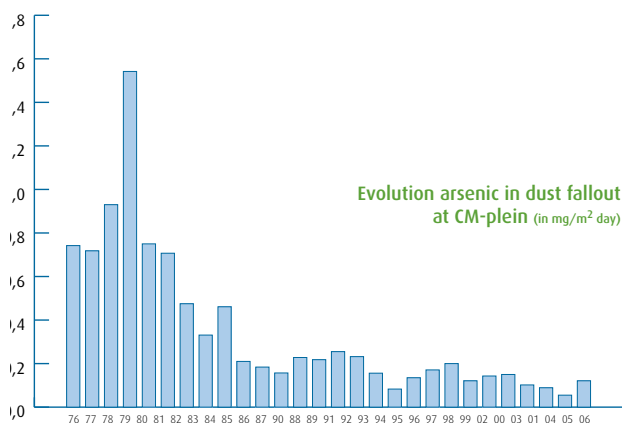
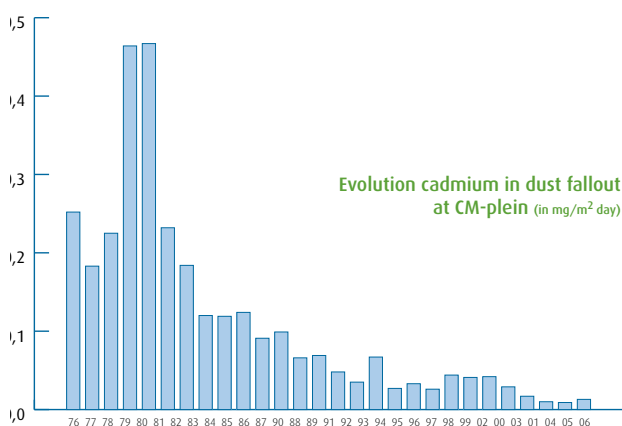
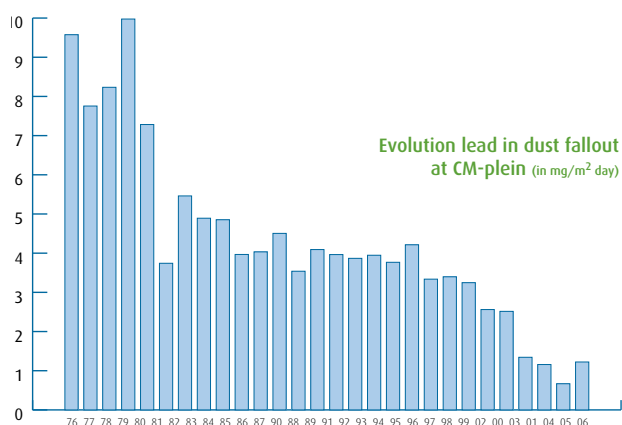


## Dust fallout

After several successive years of a decrease in the fallout of lead and arsenic, we note an increase at CM-plein in 2006. Concentrations comparable to those in 2005 were noted for cadmium.

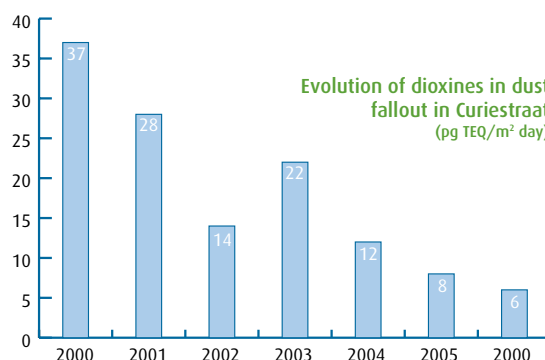
- lead :  $0.67 \text{ mg}/\text{m}^2.\text{day}$
- cadmium :  $0.013 \text{ mg}/\text{m}^2.\text{day}$
- arsenic :  $0.121 \text{ mg}/\text{m}^2.\text{day}$

Extra equipment for sampling suspended dust was purchased in 2006 in order to investigate this increase.



## Dioxins

Measurements taken at the corner of Curiestraat and Standbeeldstraat show that the downward trend as regards dioxins continued in 2006. The two-monthly measurements by the authorities VMM (Flemish Environment Agency) show, for the first time, an average of 6 pg TEQ/m<sup>2</sup> per day, which can be regarded as "non-elevated" (figures higher than 26 pg TEQ/m<sup>2</sup> per day are regarded by the VMM as "high", between 6 and 26 as "reasonably elevated" and 6 or below as "non-elevated").



• pg = picogram = 0,000000000001 gram

• TEQ = Toxicity Equivalent = a means of expressing the 17 most toxic dioxins and dibenzofurans as one number



# SOIL REMEDIATION

'In order to rectify the environmental consequences of 120 years of industrial activity, Umicore is carrying out remediation work in consultation with the neighbouring areas.

## Soil Remediation Moretusburg

Tuesday 28th November 2006 was no ordinary school day for the children from "De Vlinder" school in Moretusburg. That day they went on a school trip... in their own neighbourhood. Excavation of polluted earth to a depth of 30 cm from all gardens and public parks and green spaces had started on 4th September 2006. The area is humming with activity: diggers and tractors carry the polluted earth to the plant and return bearing clean leaf mould to replace it.



The responsible explained to the children exactly what was happening, after which they boarded a coach and followed a tractor into the plant to see what happens behind those high walls.

The visit was prepared in advance in the classroom. The teachers explained why remediation is necessary and why good personal hygiene will still be important in the future. Cartoon character "Pol the Mole" helped with this task.



Meanwhile, work is progressing faster than expected. The contractor aims to finish the work before the winter of 2007.

The city of Antwerp took the opportunity to renovate the public parks and green spaces and RI-ANT carried out substantial repairs to the sewers when it was revealed that the sewers at a number of locations in the area were in a poor condition. How to make a virtue of necessity!

The remediation was not only limited to the gardens. The dustiest places in houses, such as attics and cellars, were thoroughly dedusted as the metal-rich dust which has collected in these places for years could end up in the living areas. Five blocks were already consequently cleaned.

The remediation of the neighbourhood is an extensive project involving a large number of people. Clear communication is therefore essential and this occurs in the form of info meetings, newsletters and a website. We also do our best to answer all questions and to respond to all complaints. Our specialists are at your

disposal and can be contacted on the freephone number 0800/94 0 28.

### Soil Remediation Hertogvelden

The descriptive soil analysis for the Hertogvelden neighbourhood (i.e. the part between Kapelstraat and Lenaart de Landrelaan) was submitted to OVAM (Flanders' Public Waste Agency) on 17th August 2006 and certified as being in conformity on 20th September. The contents of this investigation were explained at a local residents' information meeting and the next step, namely formulating the soil remediation project, was discussed.

### Which parcels need to be remediated has not yet been decided definitely.

This decision will be taken separately for each plot based on the analysis of the soil samples. If these are found to be low enough, remediation will not be required. However, if the levels are too high remediation in the form of excavation and replenishment with clean earth will be necessary.

Further investigations are being carried out in the case of a number of plots. We hope that we will be able to submit the final soil remediation project in the summer of 2007 and that the declaration of conformity will be in our possession within three months. All those involved, including the residents, will of course receive detailed information on the findings and any further steps required.



Constantin Meunierplein after replanting

# WATER

‘Once again a solid performance by the Water Treatment Plant in 2006’

Concentrations mg/l	standard	2002	2003	2004	2005	2006
lead	1	0,02	0,05	0,04	0,03	0,02
cadmium	0,2	0,013	0,027	0,014	0,013	0,008
arsenic	1	0,18	0,15	0,18	0,18	0,22
copper	3	0,01	0,10	0,22	0,19	0,12
selenium	5	1,7	1,7	2,8	2,3	1,8
nitrogen	125	53	39	46	44	45

2006 was yet another good year for results. Increased activity at our plant and the resulting increased volume of wastewater did not affect the quality of the discharged water. This is shown by the evolution of the concentrations measured (see the table on this page).

An extra treatment stage was also developed and has been incorporated in the treatment process since March 2006, recuperating even more copper so that less copper is discharged into the Scheldt. The effect of this renovation can already be

seen from the annual average.

Furthermore, a biological process for removing metals was tested on lab scale. The effectiveness of this procedure having now been adequately proven, it has been decided to set up a large pilot installation in the Water Treatment Plant in order to carry out further tests using this new treatment process.

Water Treatment Plant



Measurements at the Water Treatment Plant





# ENERGY

‘Same consumption per tonne of raw material used’

In 2006 our site used 3,351 terajoule of energy, which is 2% more than in 2005. However, as 13% more raw materials were processed we can, in fact, state that, globally, energy consumption was more efficient.

In 2006 too the improvements led to the expected saving in energy so that we have lived up to our promise to continue to be among the world leaders as regards energy efficiency.

An important project planned for 2007 is the renewal of the lead refinery's burners, allowing us to cease using heavy fuel and to switch to natural gas. This is a cleaner fuel with lower dust and SO<sub>2</sub> emissions. The installation of new burners will also enable us to make large savings on energy.



# Working on the environment



Spraying roads



Water treatment



Cleaning roads and squares

More than 60 employees at our site are involved full-time with the environment. And their work is a success, judging by the positive results of recent years! Who are these employees and what do they do?

A team of 16 employees are responsible for monitoring and improving water quality, not only of the cooling water and wastewater from our processes but also the rainwater that is collected in our drains and sewers and may contain metal dust. All this water is treated and reused or discharged into the Scheldt. The quality of the discharged water satisfies all standards. Our water treatment plant is in operation 24 hours a day, 7 days a week.

The "Green team" is responsible for dust abatement. Their main task is to clean the roads in and round our plant using sprinkle-sweepers in order to prevent the dust on the road from being blown about by passing traffic. The "Green team" vehicles (bearing the name "Peeters") are a familiar sight in the Moretusburg neighbourhood.

The Green team also supervises logistical processes where dust formation is a possibility, keeping raw materials moist by spraying them or applying a curtain of mist. The Green team comprises 21 members.

Purification of process gases from the Smelter is mainly in the hands of the 17 employees from the Sulphuric Acid Plant. This is where the gasses from our Smelter, the most important production process, are purified and converted into "sulphuric acid", a commercial product.

The main responsibility of the Environment Department (8 employees) is to collect and monitor all environmental data from our measuring points. They consult with the authorities on the data thus obtained and take the first steps towards making any improvements. This department also keeps a close eye on environmental legislation and manages all our permits.

The Environment Department collaborates with the various other departments in order to constantly improve our environmental results.

All our employees take our environment seriously. They carry out their jobs with the utmost concern for safety, health and the environment and have been specially trained to do so. We are confident that constant improvement will be seen year after year! a

# Plant's activities

Did you know that Umicore ....

Have you ever wondered what happens to your mobile phone when it is end-of-life? After being handed in at collection points or in part-exchange, huge quantities of mobile phones end up at Umicore in Hoboken for recycling. From 1 tonne of mobile phones (approx. 15,000 phones) we recycle 350 gr. gold, 150 gr. palladium, 3.5 kg silver and 130 kg copper. Although the precious-metal content is low, it is these precious metals that make the recycling of a mobile phone economically viable and worthwhile. If we did not recycle (precious) metals, thousands of tonnes of electronic scrap would end up at the dump every year or – even worse – possibly be simply discarded in the environment, with disastrous consequences.

- › ... is specialised in refining the by-products containing precious metals from the copper, lead and zinc industry or from precious metal refineries.
- › ... is world leader in the recycling of waste containing precious metals such as end-of-life mobile phones, electronics and car catalysers and, consequently, make an indisputably positive contribution to worldwide environmental issues.
- › ... manages, at the Hoboken site, to recycle seven precious metals (gold, silver, platinum, palladium, rhodium, iridium and ruthenium) and a dozen other metals (such as lead, copper, selenium, tellurium, indium...). This is unique in the world!!
- › ... at its plants in Germany, reuses its precious metals in environmental technology such as car catalysers and industrial catalysers.
- › ... is internationally recognised as one of the most innovative and eco-efficient companies of its kind and is involved in various environmental projects within the European Union and the United Nations as a reference company.
- › ... employs 1,300 people in Hoboken, 600 of whom live within 10 kilometres of the plant.





# Milieu-uitgaven

'€ 6,7 miljoen uitgaven voor leefmilieu in 2006'.

In 2006 environmental expenditure came to € 6.7 million, € 3 million of which was spent on investment projects associated with the environment. The most important of these were:

The erection of wind screens and the introduction of additional spraying at the storage site round the Crushing Plant.

Expansion of the gas cleaning plant within the Special Metals Production Plant

Installation of an overfill safety system on all storage tanks.

.....Introduction of two vehicles fitted with a fog cannon to abate dust.  
Various measures to limit dust emissions from the Crushing Plant.

.....  
Wind screens



.....  
Fog canon



# A glance at next year

## 'A new Precious Metals Concentration Plant'.

It August 2006 it was announced that: "Umicore invests € 50 million in a new Precious Metals Concentration Plant in Hoboken." Meanwhile, the work on this has been started for some time now and the new plant should be operational by June 2008.

In addition to improving our efficiency, the construction of this plant will also lead to even better environmental results as this innovative process is expected to result in a further reduction in lead and selenium emissions. The present Precious Metal Concentration Plant at the edge of our site will be demolished and the area will be remediated. The new plant will be located in a central position on site, reducing noise nuisance even more. The Vinkevelde neighbourhood, in particular, should notice a difference.

### Time for a facelift

No one will fail to notice the change in appearance of the site as seen from the road. Constant investments have been made in sa-

fer, environmentally friendlier and more efficient production plants in recent years but, in spite of these extensive changes within the walls, our plant on the Greinerstraat still looks like an old-fashioned industrial complex.

The "facelift" that we intend to give it is designed, in the first place, to further improve our employees' working environment and, at the same time, make the appearance of our plant more attractive.

The most conspicuous change will undoubtedly be the modern zinc and glass reception building that will be built by entrance A. The surrounding buildings will be clad with zinc in order to create an attractive whole. After the refurbishment in the summer of 2008 the Greinerstraat itself will also look a lot greener. The whole neighbourhood should look more attractive...

Entrance A after the facelift



## Complaints, questions, comments, ...?

Please do not hesitate to call us on the freephone number 0800/93739.

Operators are on hand round the clock to take your call. We will try to give you an answer as quickly as possible.

The freephone number 0800/94028 is available for questions relating to the Moretusburg and Hertogvelden soil remediation projects.

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