

Chlorine Industry Review

2012-2013

Towards a new European
Industrial Policy for more
Competitiveness

Online copies are available on www.eurochlor.org. Paper copies can be easily ordered via the contact form on the same web site.

The pictures in this Review all show "**chlorine things**": this is Euro Chlor's way of illustrating that chlorine chemistry based products and applications are omnipresent and indispensable in everyday life. They create real added value and benefits for each and everyone of us.

it's a
chlorine
thing●

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Towards a new European Industrial Policy for more Competitiveness

Business as well as political and social life is marked by changes usually caused by events which often can be tracked back to certain signals. These signals are often 'weak signals', difficult to detect at the time and only become detectable through later analysis. The financial crash of 2008 is one such example where the early signs of the impending disaster were there to detect (indeed some recognised them but decision makers chose to ignore them) but were all too obvious when researched later.

I have recently been pondering what 'weak signals' are there to be recognised at the moment and whether they portend a major trend change for the future.

The signs I have in mind are the skewed financial performance amongst our membership, the news of the proposed merger of two of our member companies, the bankruptcies of several others (2 in 2013), the obvious disparity of electricity prices in Europe compared to other parts of the world and finally an improvement in the daily production rates of chlorine month on month from April to July 2013.

I should add to that the barrage of questions the secretariat receives on whether the effect of the conversion from mercury to membrane will result in a reduction in European capacity.

I believe that in the future we shall look back and recognise that a major trend change occurred during the period 2010 to 2015. Some of these changes will be economically and market driven and therefore it is outside the scope of your association to act or comment on but it is legitimate for you, the members, to expect other initiatives designed to bring positive outcomes.

Bearing this in mind, a year ago Euro Chlor adopted Competitiveness, Regulation and Sustainability as our theme and direction of action. Since then we have succeeded (together with others) in bringing competitiveness centre stage in the discussions held within the Brussels Bubble. It is clear that both the Council and the Commission (in the form of DG Enterprise) are taking competitiveness and particularly energy policy, seriously. At a recent meeting organised by the Commission, EU Vice-President Tajani made it clear that the chemical industry was vitally important to Europe. With its €50 billion trade surplus, Mr Tajani noted that the industry had to be nurtured and not left to fend for itself. Various member states echoed this sentiment which came as a pleasant surprise.

Daniel Calleja Crespo, Director General of the Enterprise Directorate, proposed a follow-up meeting with CEFIC before a major EU summit in February 2014, focussing on European Competitiveness. In preparation for these meetings, a study into the impact of energy prices on the European chemical industry will be conducted with Euro Chlor being named as a major contributor. More to come on this over the next year.

Few of you will need reminding of the Emissions Trading Scheme (ETS) which has dominated our planning and work over the past five years. For Euro Chlor members there is little to say, other than to acknowledge that Phase 3 has now commenced: a period during which member states are able to provide financial compensation to industry in order to offset the carbon cost included in electricity prices. Of course, not all governments have implemented schemes and even worse, some have imposed additional energy taxes – presumably in an effort to boost government income.

The fate of the ETS became the subject of discussion with the recent decision by the European Parliament to introduce back-loading. Back-loading is a mechanism which the Commission can use to remove 900 million carbon credit allowances from the market by reducing supply and increasing the price. It is being



Alistair Steel
Executive Director



viewed by industry as a blatant attempt to interfere in the market, something which goes against current European industry practice.

Finally, let me turn to another fashionable phrase which is doing the rounds – 'unconventional fuels'. If you haven't heard it before, the phrase refers to shale gas. Viewed by many as an answer to the global shortage of energy, shale gas is rapidly gaining importance in the United States.

In Europe we are counseled to be wary. We are not the USA. Europe doesn't have the open space available, making drilling more difficult from a social perspective. Underground resources in Europe are owned by governments, not the land owner. Most crucially, Europe is governed by the politics of fear and not of commercial opportunity.

At Euro Chlor we believe that a programme of discovery is needed in order to make well thought-out decisions on shale gas exploitation as part of a new European Industrial Policy. Until that time, our industry will continue to advocate for affordable electricity and petrochemical feedstock in order to close the competitive gap with other regions.

Meanwhile, before you launch into reading this year's review which is packed with information on the progress we have made over the last 12 months, I would like to draw your attention to one major success story which is the finalization of the BREF review. This is the culmination of over two years of intensive and often frustrating work involving member companies and we can be very content with the outcome.

In closing, I wish all our readers a successful year and sincerely hope that next year we shall be able to report progress on the competitiveness agenda.





Sustainability 1.

Sustainability is our license to operate

For the European Chlor-Alkali industry, the successful creation of added value is closely linked to the sustainability of its operations and its products. This is why the sector pioneered its **first Sustainability Programme** in our industrial landscape as early as 2001. It created a united industry approach and has demonstrated industry's commitment to addressing the key factors determining sustainability across all the three pillars - environmental respect, social progress and economic development. Its performance indicators fully reflected its ambition. Substantial improvements were made and the industry has been firmly focused on the critical challenges.

Successful sustainable development requires dialogue between all stakeholders in society, to ensure a common understanding of industry benefits and impacts. These debates have consistently been held in accordance with our commitment to transparency and openness.

Internally, this clarity stimulated companies to improve their technology and health/safety/environmental performance. Euro Chlor support and guidance has helped companies throughout the industry move towards the highest standards. It also triggered positive competition between member companies on these matters. Externally it has generated trust and respect by demonstrating the soundness of our approach.

Our **second 10 year Sustainability Programme** initiated by the Management Committee in 2011 targets further substantial gains. The results of the 2012 survey show both positive highlights and areas for improvement. Further conversion to the membrane process combined with efforts made by the companies resulted in a noticeable reduction in energy consumption in 2012. Unfortunately the valorisation of hydrogen showed a slight decrease in performance.

It is too early to evaluate the significance of the new parameter, the percentage of working time dedicated to HSE training. Further discussion with individual companies, after analysis of the distribution of data, should help us improve its representativeness.

The overall lack of improvement in safety performances (lost time injuries) and the significant increase in the number of process incidents of some plants has led the Management Committee to increase the focus on this aspect for the coming years. **Operational sustainability** is our license to operate. A safety commitment to be signed by the members has been proposed and particular efforts will be made to help those where improvements are expected.

The external communications dimension is enhanced and supported by communications actions that underline for a wide range of stakeholders the intrinsically positive contributions of chlorine-based chemistry to society. **Product sustainability** is an integrated part of the triangle sustainability - competitiveness - regulatory compliance that is today's core theme and future direction.

Andreas Amling
Chairman of the Management Committee



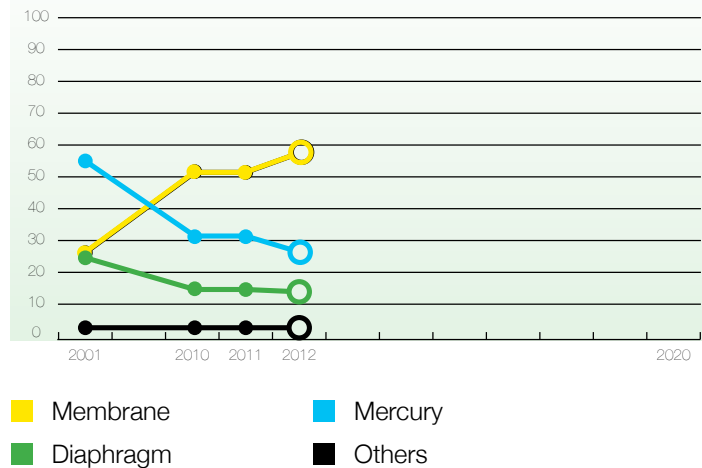
Manufacturing technology



Several conversion projects that had been postponed during the beginning of the economic crisis were finalised in 2012, so the switch from the mercury to the membrane process continues to progress. The latter now represents about 58% of the chlorine production capacity in Europe while about 26% is still based on the mercury process.

This evolution may also be influenced by the requirements of the revised chlor-alkali BREF document under the Industrial Emissions Directive: the mercury cell technique cannot be considered BAT (Best Available Techniques) under any circumstances.

Chlorine manufacturing process
(% of total installed capacity)



High performance nylon for parachutes and airbags: chlorine things

“As an industry, we are following through on what we committed to.”



Alistair Steel, Executive Director

Economic development

Within the Sustainability Programme, Euro Chlor has decided to report monthly, quarterly and annual data on European production of chlorine and caustic soda. This includes utilization rates, caustic stocks, capacity and technology by plants and applications. The aim of this openness is to enhance transparency of the chlor-alkali sector.

In 2012 and 2013, Euro Chlor continued to publish these figures on its website and on paper. Every year the Industry Review includes a map of Europe showing the location of all plants and a table indicating the location, ownership, technologies and capacity of each plant.

Mercury emissions

With the members' commitment to phase out the mercury technology for the chlor-alkali industry by 2020, Euro Chlor continues to monitor the performances of the production units still using it.

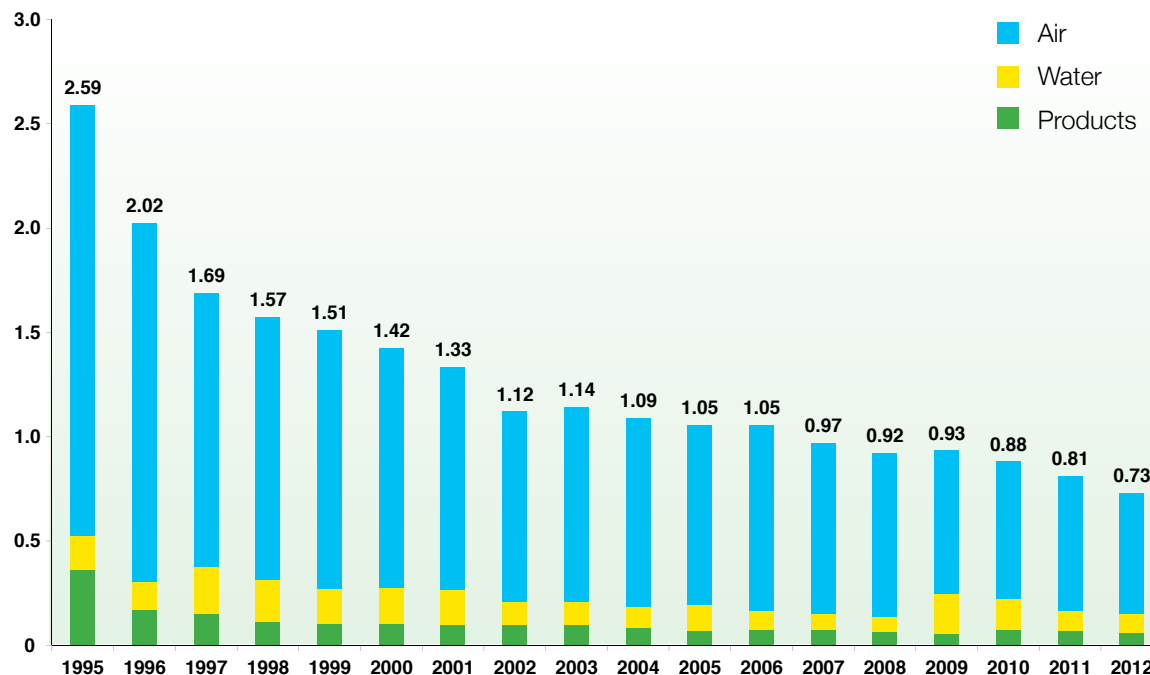
Overall European emissions in 2012 amounted to about 0.73 g Hg/tonne chlorine capacity, continuing to confirm the trend for improvement with respect to the previous years (0.81 g Hg/t in 2011).

As noted in recent years, the plant average reduction of emissions is due to the improvement shown by the lower performing plants, and there is still a margin for reduction...

Unfortunately there are still two plants slightly above the 2007 target of 1.5 g Hg/tonne chlorine capacity for the total emissions.

Trend of mercury emissions

The yearly emissions data for all European chlorine producers using the mercury technology continue to show a progressive reduction



Energy use

For the new programme, the energy is calculated in primary fuel consumption and the result is expressed as a percentage of the 2011 value which is referred to as 100%. This energy includes not only the electricity consumed in the electrolysis cells and for the utilities (motors, pumps and illumination) but also the steam used for heating fluids and particularly for the concentration of the caustic to 50% (for diaphragm and membrane processes).

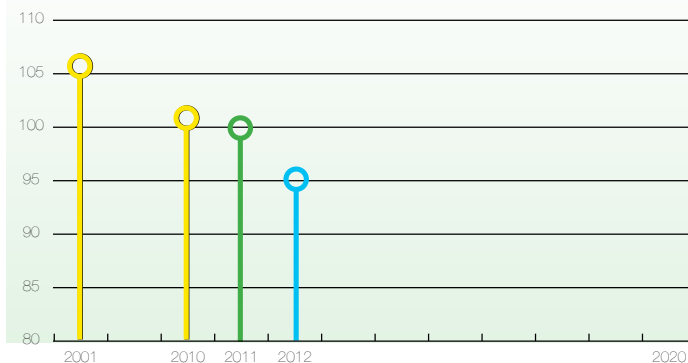
The coefficients used to calculate the primary fuel use from the electricity and the steam are based on European average figures for electricity generators and steam boilers.

To illustrate the concept, the corresponding figure for 2001, the first year of the first programme, is about 106% of the 2011 consumption while 2012 showed a noticeable average reduction of about 5%. There are nevertheless still important differences between the processes and the sites.



Energy consumption

(% with respect to 2011)



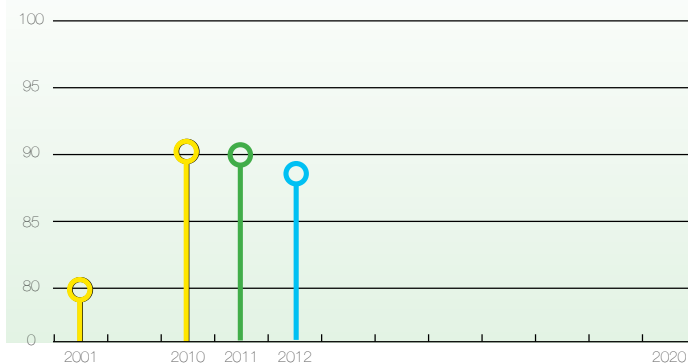
Valorisation of hydrogen

The 2012 situation unfortunately shows a further decrease compared to the previous two years with about 88% of the produced hydrogen valorised. Some companies still have difficulties to find a way to use the hydrogen by-product even though new technologies, like fuel cells or electrolyzers with depolarised cathodes appear on the market.



Hydrogen used

(% of production)



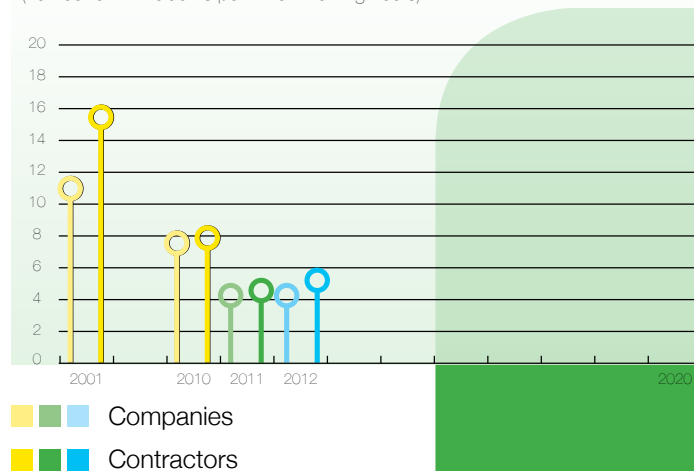
Lost-time injuries



It is important to keep in mind that this indicator was modified with respect to the first programme, gathering only the accidents specific to the chlorine industry, i.e. directly related to electric current/ voltage, chlorine, caustic, hydrogen (explosion), mercury, hypochlorite, sulphuric/hydrochloric acids and other reagents used in the perimeter of the electrolysis unit.

The frequency rate figures (number per million working hours) for own employees (4.3) and contractors (5.2) is slightly higher than the previous year and efforts will be required from some sites to reduce the number of accidents.

Chlor-alkali Lost Time Injuries frequency rate
(number of LTI incidents per million working hours)



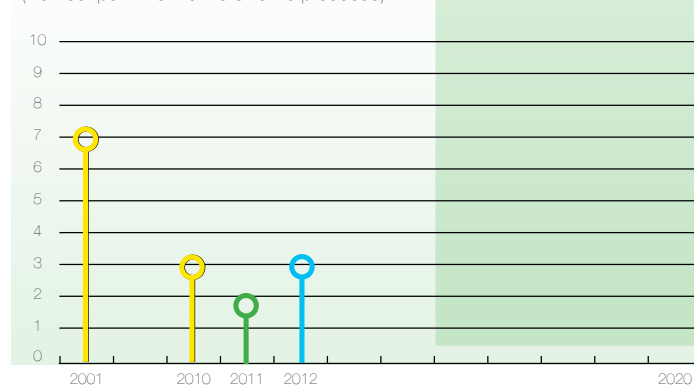
Process incidents and losses



After a good decrease in 2011 compared to the previous year, in 2012 the indicator's value more than doubled, reaching about 3 accidents per million tonnes chlorine produced.

It is Euro Chlor policy to contact those companies and sites showing high values and to offer its support to help improve their performance.

Process incidents and losses
(Number per million tonne chlorine produced)





“”

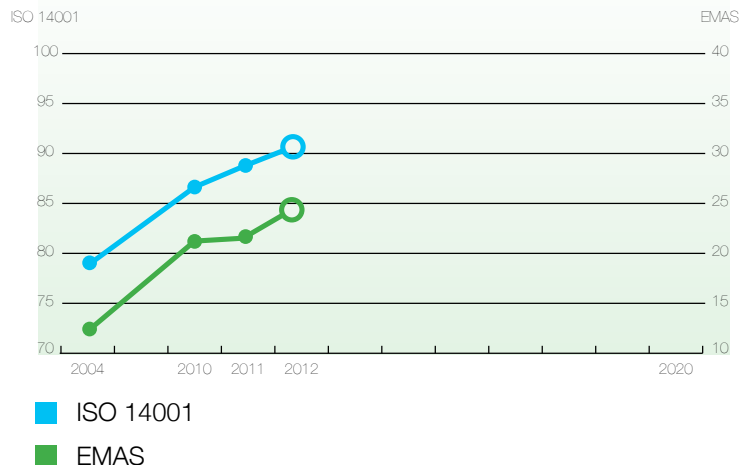
“It will take continuous efforts to bring the number of process incidents and losses down to an absolute minimum.”

Jean-Pol Debelle, Technical Director

Chlorine chemistry is used for developing green energy technologies

Environmental certifications

(% of total sites)



■ ISO 14001

■ EMAS

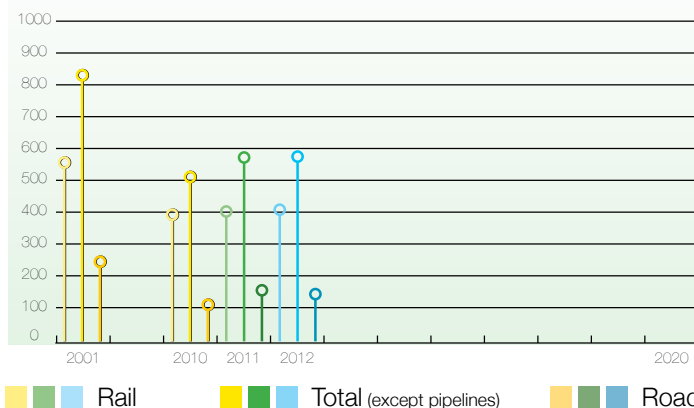
Transportation

The quantities of chlorine transported by rail, road and waterways remained practically at the same level as last year (about 6% of the production), with roughly 2/3 of transport taking place by rail and the rest by road.

There were once again no transport incidents in Europe during 2012.

Chlorine transported outside industrial sites

(Thousands of tonnes)



■ Rail

■ Total (except pipelines)

■ Road



Environmental accreditation

Environmental accreditations recognise the fact that organisations have and put into practice an environmental management system, and Euro Chlor advises its members to demonstrate, via these accreditations, that their production units care for environment.

There was a further increase in site accreditations, especially for EMAS (Eco-Management & Audit Scheme). Out of 65 chlorine production units, 59 are ISO 14001 certified. The number of sites with EMAS certification, which is more demanding, is now 16.



Time dedicated to HSE training

This newly introduced indicator monitors the proportion of the working time spent on formal training of the operators in the fields of health, safety and environmental protection (HSE).

If we disregard the abnormally high value in 2011, the average value in 2012 remains unchanged at about 1% of the working time; nevertheless there is still a huge spread of individual values and further enquiry is necessary to increase the representativeness of this result.

Responsible Care

Euro Chlor does not require its members to sign up to the 'Responsible Care®' initiatives but strongly encourages them to do so. In 2012, 31 of all 34 member companies were convinced of the desirability of a formal commitment; they have signed up for the programme. One more company has started the process to sign this commitment.

The corresponding national associations, in charge of the Sustainability Programme, will be contacted for possible support.



REACH product knowledge

With the successful registration of the 13 Euro Chlor substances under REACH well behind us, the management of the consortia was handed over to ReachCentrum at the end of 2012. Euro Chlor Secretariat members will stay involved in the consortium work in case issues arise. Also the Euro Chlor Project Team will keep monitoring REACH issues albeit at a very low level.

Euro Chlor also successfully finalized all substance documents of the registered compounds as agreed by industry under the Global Product Strategy of the ICCA (International Council of Chemical Associations). These GPS documents can be downloaded from the Euro Chlor site (download centre).

REACH follow-up work on Euro Chlor substances is dealing with additional testing for 1,2-dichloroethane. This substance is also on the candidate list for authorisation. Trichloroethylene is already on the REACH authorization list and highly committed downstream users are working on the application for authorisation. Carbon tetrachloride and MCCP are listed on the Community Rolling Action Plan (CoRAP) and are currently in the phase of identifying additional tests. Perchloroethylene is also on the CoRAP list but additional testing needs have yet to be identified.

! **362,076**

tonnes of PVC have been recycled in Europe in 2012. The aim is to recycle 800,000 tonnes by 2020.



High quality PVC for trendy garments

PVC industry ever more sustainable

All major downstream chlorine users have developed sustainability programmes.

VinylPlus is the European PVC industry's new ten year Voluntary Commitment to Sustainable Development. It has been developed in an open process of stakeholder dialogue, including private companies, NGOs, regulators, civil society representatives and PVC users. The scope of the programme extends to the EU-27 plus Norway and Switzerland.

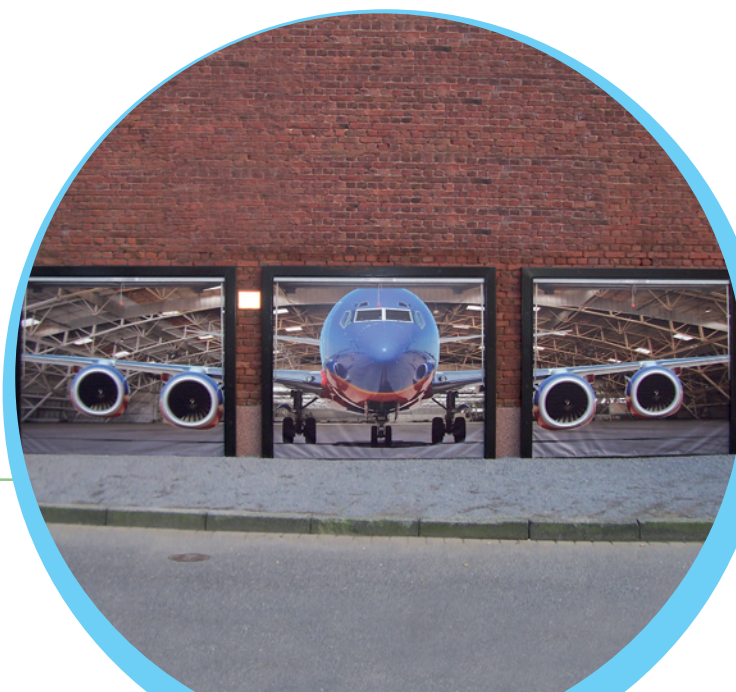
Five key sustainable development challenges have been identified for PVC, together with a set of working principles. The first four challenges are technical in nature whilst the fifth challenge addresses raising awareness and understanding of the importance of sustainable development:

- **Controlled-Loop Management of PVC:** work towards the more efficient use and control of PVC throughout its life cycle
- **Organochlorine Emissions:** help to ensure that persistent organic compounds do not accumulate in nature and that other emissions are reduced

- **Sustainable Use of Additives:** review the use of PVC additives and move towards more sustainable additives systems
- **Sustainable Energy & Climate Stability:** help minimise climate impacts through reducing energy and raw material use, potentially endeavouring to switch to renewable sources and promoting sustainable innovation
- **Sustainability Awareness:** continue to build sustainability awareness across the value chain – including stakeholders inside and outside the industry – to accelerate progress towards resolving our sustainability challenges.

In 2012, 362,076 tonnes of PVC have been recycled in Europe. The aim is to recycle 800,000 tonnes by 2020.

The Progress Report is VinylPlus's annual review of action towards the concrete and measurable targets set out in the Voluntary Commitment. Read the full Progress Report 2013 here: <http://www.vinylplus.eu>.



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vinyl^{plus}

**After the PU insulation job of your garage,
give it an amazing makeover with PVC film**



Regulation



Chlor-alkali BREF document update

The revision of the Best Available Techniques Reference Document (BREF document) for the chlor-alkali industry, required by the new Industrial Emissions Directive, will be completed in 2013.

Euro Chlor Secretariat and Member companies contributed much of the specific technical information through the entire process, supporting the work of the Technical Working Group (TWG). The revision was started in 2009 and a first draft BREF document was shared in December 2011. This was subsequently improved significantly by input from our industry. An updated version was published for discussion at the TWG conclusion meeting in December 2012. Advocacy through the national contacts aimed to avoid overly prescriptive details and built support for realistic requirements. Most of Euro Chlor's proposals were accepted but excluding asbestos diaphragm and mercury processes as BAT (Best Available Technique) was unavoidable.

A final draft was presented at the "Article 13 Forum" meeting in June 2013, with the discussion limited to only a few selected amendment proposals, aiming to assess whether consensus could be reached. The removal of the requirement for refrigerants did not reach consensus, unfortunately, but the BREF will not include a BAT-AEL for chlorate. The requirements for the free chlorine treatment could not be fully clarified but problems are not expected for the permits' update. The EIPPC Bureau and several Member States explicitly thanked Euro Chlor for the open and constructive support throughout the process.

A closed Article 75 Committee meeting, expected in November 2013, will finalise the BREF document. The BAT Conclusions will then be adopted by the Commission as a legally binding Implementing Decision to be published in the Official Journal of the EU early 2014. Local authorities will then have 4 years to update plant permits in accordance with the new requirements.



Emission trading scheme (ETS) Directive implementation

Following the adoption of the state aid guidelines in May 2012, Euro Chlor concentrated its efforts on the chlor-alkali benchmark which in the ETS Directive has to be set according to the "most efficient technology". The industry had numerous discussions with the Commission on how to interpret this in the case of the chlor-alkali industry. The discussions focused on identifying a benchmark value that on one hand satisfies the objectives of the Directive and on the other hand the need to preserve the competitiveness of the sector. Euro Chlor actively contributed to setting acceptable benchmarks that were adopted and published in December 2012.

During spring 2013 the Commission launched the review of the list of industries exposed to carbon leakage as stipulated in the ETS Directive. This exercise will have to be finalised by end of next year. Euro Chlor is contributing to the stakeholder discussions and online consultation to demonstrate that the chlor-alkali industry remains, as already proven in 2009, at risk of carbon leakage.

“Thanks to a strong and constructive participation of Euro Chlor members, we managed to obtain a good and affordable chlor-alkali draft BREF document.”

Jean-Pol Debelle, Technical Director

Biocides

The active substance review for chlorine, sodium hypochlorite and calcium hypochlorite continues under the Biocidal Products Regulation (BPR, 528/2012), which replaces the Biocidal Products Directive (98/8/EC) since September 2013. The substances have meanwhile been discussed at two EU Technical Meetings, and the registration dossiers have been completed with additional information requested by the Rapporteur Member State. It is expected that at least one more Technical Meeting discussion will be required and as such the approval of the active substances is expected in 2015. The on-going discussion of disinfection by-products and their scope within the BPR should not affect the active substance review programme.

The BPR introduced new rules concerning data sharing and compensation, as well as establishing an online registry that ensures that all suppliers of the active substance within the EU are involved in the registration process. Other changes from the previous directive include new considerations for in-situ biocides, treated articles and food contact materials, and the introduction of Union Authorization and Mutual Recognition procedures for biocidal product authorization. This will become relevant for our substances' downstream uses in future.

Chlorinated alkanes face global challenges

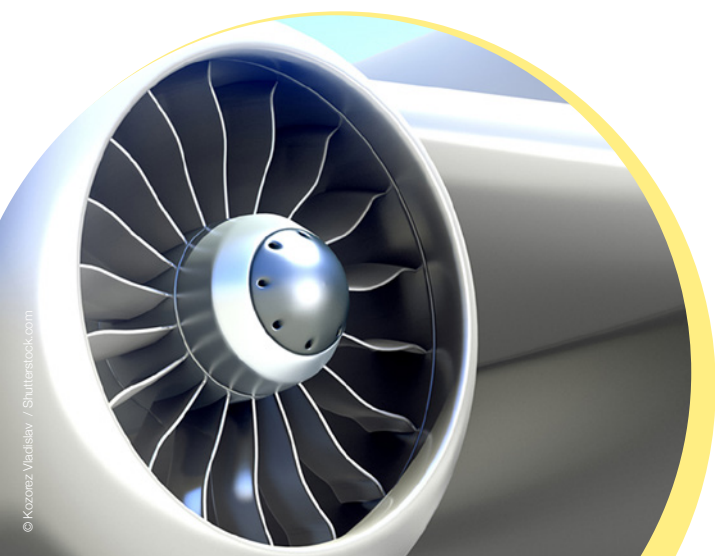
Chlorinated alkanes (CAs), commonly referred to as chlorinated paraffins (CPs) face global challenges due to regulatory developments in Europe, Canada, USA and under the global UNEP Stockholm Convention.

In Europe, short-chain chlorinated paraffins have been subject to regulatory pressure and are now no longer produced in the EU. Meanwhile, regulatory focus in the EU and North America has shifted to medium-chain chlorinated paraffins (MCCPs). MCCPs are currently undergoing Substance Evaluation under the REACH Community Rolling Action Plan (CoRAP), triggered by concerns over potential persistent, bioaccumulative and toxic (PBT) properties of the substances. The evaluating competent authority has requested further testing data on MCCPs in order to clarify their environmental impact of the substance. The MCCP REACH Consortium is exploring new testing and analytical methods for assessing biodegradation and bioaccumulation potential of MCCPs. While this complex mixture poses challenges, progress is being made in the development of state-of-the-art analytical techniques for characterizing MCCPs and their breakdown products.

International Chlorinated Paraffins Industry Association

In the interest of international cooperation of global CP manufacturers, the activities of the International Chlorinated Paraffins Industry Association continue. A meeting of the major global CP producers took place in September 2012 in Brussels and was attended by representatives of the CP industry from Europe, China, US, India and Japan. Each region contributed information on the regulatory and scientific developments and still present global challenges were discussed. The second edition of the ICPIA newsletter was published in 2013 in the interest of promoting global cooperation of CP producers.

High-tech metal parts are degreased with chlorinated solvents



Chlor-alkali metallic mercury reporting to the Commission

The EU Regulation on export ban and storage obligation (1102/2008) requires that quantities of metallic mercury on chlor-alkali sites must be reported yearly to the Commission, starting in December 2009.

The Euro Chlor proposal to gather the data from the member companies utilising the mercury cell technology has been recognised by a Commission Recommendation. All member companies contributed and we successfully provided the following data successively for each reporting year:

- Best estimate of total amount of mercury still in use in the chlor-alkali cell
- Total amount of metallic mercury stored on the site regardless of whether the chlorine unit has been shut down.

These are publicly available on DG Environment's website (<http://ec.europa.eu/environment/chemicals/mercury>) and can also be consulted on the [Euro Chlor website](#). The global evolution trend shows a continuous decrease due to the progressive conversions of chlor-alkali plants using the mercury technology with eliminated mercury sold to other chlorine production units or stabilised as mercury sulphide and disposed of in salt mines.

Three mercury based units were converted to the membrane process during 2012 while mercury removal continued in 2013.



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Flexible PVC contact lenses show the way for visual comfort

Electromagnetic fields: better protection for exposed EU workers

Rules to ensure the safety of workers exposed to electromagnetic fields have been adopted by the European Parliament and Council. Euro Chlor welcomed the Directive which addresses the short term impact, stipulates maximum exposure limits and identifies protective measures for workers. The transposition of the Directive into national law by the Member States should be done by latest July 2016. Euro Chlor will continue to contribute to the development of guidelines to interpret and apply the Directive.

“Authorisation and Restriction, intended to stimulate innovation through substitution, should be based on sound science and real risk. Pseudo-science means pseudo-innovation and counteracts Europe’s competitiveness.”

**Dolf van Wijk,
Science and Regulatory Affairs Director**



Supporting Occupational Health: a continuous process

Upon members' request, Euro Chlor organized its second workshop on mercury exposure in September 2012. Medical doctors, production staff and HSE managers from 9 different chlorine producers exchanged experiences on a wide variety of topics, including adequate training of personnel and contractors, the use of personal protective equipment, the consequences of high levels of mercury in urine and the influence of plant design on exposure levels. They ended by asking the Health Working Group to draw up some concise guidelines related to decommissioning as all mercury plants should be eliminated in the upcoming years. The Health Working Group sent out a comprehensive questionnaire to plants that had already gone through the conversion process to collect valuable practical experience.

The guideline should be finalized by the end of 2013. Meanwhile chlorine plants dutifully report yearly worker exposure data. The available figures for 2012 show a steady decreasing trend for the majority of the plants over the past 10 years. The sites that still have room for improvement are systematically contacted by Euro Chlor and are offered assistance by technical experts.

Second Workshop

In Warsaw, medical doctors, production staff and HSE managers from 9 chlorine producers exchanged experiences on a wide variety of mercury-related topics

POPs: worrying lack of progress

At the eighth meeting of the POP (Persistent Organic Pollutants) Review Committee in October 2012 ('POPRC8'), the risk profile of Short Chain Chlorinated Paraffins (SCCPs) was discussed once more and once again no conclusion was reached. The Stockholm Convention's Review Committee strives for consensus in its decision making. There was neither consensus for a decision to move the dossier forward nor for a decision to 'set it aside'. Instead it was agreed to postpone the discussion of the risk profile until 2015. This outcome seems to indicate that the Convention is prepared to list any candidate substance which is submitted to the Convention.

POPRC8 also reviewed the hexachlorobutadiene (HCBD) risk profile which was accepted without any discussion by its members. Industry alerted POPRC members of significant weaknesses in the dossier including the failure to demonstrate that the substance 'is likely, as a result of its long-range transport, to cause significant adverse effects'. However, industry comments were largely ignored.

The overall lack of scientific rigour of the POPRC process continues to be worrying and the risk-oriented requirements of the Convention are not properly addressed. The World Chlorine Council is working closely with the International Council of Chemical Associations (ICCA) to address these and other procedural shortcomings despite limited interest of POPRC members to address these issues.



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Protective equipment is often based on chlorine chemistry



REACH

All chlorinated solvents were registered before the first deadline (2010). Several chlorinated solvents are currently under evaluation by Member States. France, rapporteur for carbon tetrachloride, has issued a proposal for extra studies; ECSA commented back. Latvia, rapporteur for perchloroethylene is evaluating its REACH dossier. For trichloroethylene (TRI) the Lead Company is seeking support from affected downstream users to get the use of TRI in metal cleaning authorised.

French regulation on dry-cleaning

France has restricted the use of volatile solvents for dry-cleaning and textile care (Arrêté 2345) next to residential areas. Dry-cleaning machines older than 15 years have to be progressively replaced. The intention is clearly to move dry-cleaning machines using perchloroethylene (PER) out of city centres, regardless if emissions and risks are controlled (by applying modern machines) or not (by using outdated machines).

Dry-cleaning: collaborative project

ECSA and the International Committee of Textile Care, CINET have created a common project to ensure the safe use of PER in dry-cleaning applications. Both associations aim to demonstrate the sustainable use of PER as the solvent of choice for dry-cleaning. The project will be presented in Paris in October 2013.

Sustainability workshop

ECSA has aligned with the European Associations of Chemicals Distributors for a workshop on chlorinated solvents in Sept. 2013 to enhance the collaboration between chemicals distributors and downstream users for a safe, sustainable use of chlorinated solvents.

Product toolbox

The ECSA online toolbox provides users of chlorinated solvents with information about the safe and sustainable use of these products, as assessed under REACH.

OECD HPV dossiers

ECSA has closely cooperated with the Swiss authorities on the preparation of SIDS dossiers and SIARs for the substances DCM (dichloromethane) and CTC (carbon tetrachloride) under the High Production Volume Chemicals Programme of the OECD. The IUCLID datasets will be provided to the OECD for the finalization of the SIARs.

DCM in hairspray

In 2012, the European Scientific Committee on Consumer Safety (SCCS) has issued an opinion to ban the use of DCM in hairspray for consumers. ECSA concluded that the risk assessment is wrong and the use of DCM is safe. ECSA will follow this up and send a comment to the SCCS to allow the continued use of DCM as an ingredient in hairspray up to 35%.

DCM in paint strippers

In 2009 the EU Commission decided to ban the use of DCM in paint strippers for consumers. No member state managed to implement derogations for trained professionals, in spite of strong support from ECSA, painters and paint stripping associations. It is unlikely that this use will be permitted anywhere in the EU. Use of DCM based paint strippers in closed industrial installations is still permitted, provided that emissions and exposure of workers are well controlled.

World Chlorine Council discusses matters of global importance

During the Chlorine Institute (CI) International Meeting (April 2013), various presenters discussed aspects of our industry that are of interest to all regional representatives.

Euro Chlor Executive Director Alistair Steel presented the Euro Chlor priorities for the forthcoming year. During the Chlorine Institute Board Meeting, Euro Chlor Chairman Andreas Amling presented various aspects of the Euro Chlor activities and referred to the Communications programme that comprises highlighting the benefits of chlorine chemistry to society.

The spring meeting of the Management Committee of the World Chlorine Council (WCC), for which the secretariat has passed from Euro Chlor to the Chlorine Chemistry Division of the American Chemistry Council, covered quite a host of technical topics:

- International developments on chlorinated disinfection by-products, covered by the Global Advocacy and Science Team
- The UNEP sustainability goals
- The UNEP global mercury meetings and treaty, leading to the diplomatic conference to be held in October in Minamata (Japan)
- An update on the conventions on persistent organic pollutants (POPs)
- A report of the Global Safety Team on a very successful safety workshop held in India

The association has also started a strategic review of the WCC mission and goals.

UNEP partnership activities

UNEP initiated several voluntary Partnership activities. Euro Chlor, representing the World Chlorine Council, is a very active contributor to the Chlor-alkali Partnership. The UNEP website provides access to a range of documents with guidance on best practices and useful documentation on facts about the chlor-alkali industry. The role of the Partnership is expected to gain importance now the Convention has been agreed and is being implemented. WCC continues to support the Partnership activities and build on its global experience.

Minamata Convention agreed

The final negotiation session towards a UNEP Mercury Convention, to be called the Minamata Convention, was held in Geneva in January 2013. The outcome of this fifth session of the International Negotiating Committee (INC) was a commitment to this Convention by 140 countries present. Euro Chlor participated representing the World Chlorine Council (WCC). The WCC representatives felt that the outcomes for the global chlor-alkali sector in terms of treaty text were the best achievable under the circumstances. The outcome is a set of measures to reduce and further eliminate uses and releases of mercury from anthropogenic sources.

A 2025 deadline was agreed for phase out of mercury cell production globally, with two five-year exemption possibilities. The text provides potential for considerable use and transfer options of excess mercury within our sector. Important details such as requirements for storage and waste disposal still have to be further defined. The consequences of the Convention for Europe are minimal. A diplomatic conference to seal this will be held in Japan in October 2013.



UNEP – Chlor-Alkali Partnership mercury reporting

In accordance with its commitment, the World Chlorine Council continues to gather mercury emissions data from its members and report them yearly to the UNEP Chlor-Alkali Partnership.

The number of plants and the mercury cell-based production capacity continue to show a worldwide decrease: the number of plants went down from 91 to 50 over the period 2002-2012 (-45%) and the mercury cell-based capacity from 9.1 million tonnes to 4.9 million tonnes (-46%).

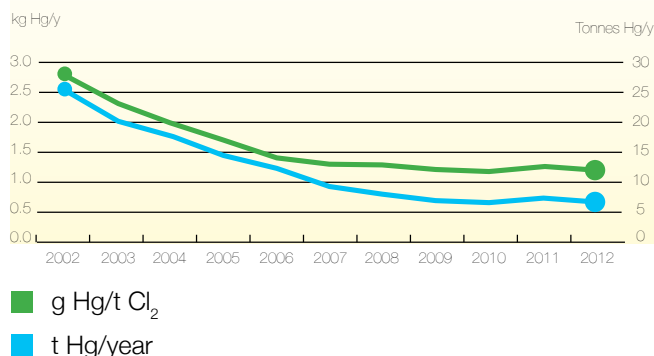
Global mercury emissions have been further substantially reduced in the period 2002-2012. They went down from 24.6 tonnes per year to about 6.2 tonnes per year, a 75 % decrease over the reporting period. The emissions expressed in g mercury/tonne annual chlorine capacity show the same trend. The graph of the evolution of the production capacities using the mercury process in the WCC regions was introduced by UNEP in its brochure in preparation for the last INC5 conference.

Recently the WCC decided to add some information to this annual reporting; this would cover the following items:

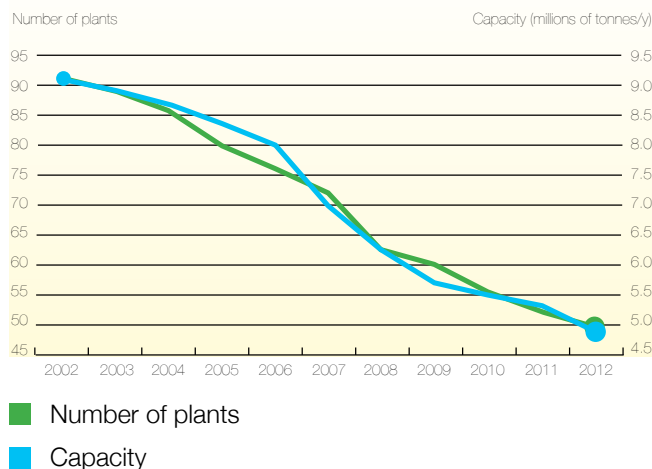
- List of closed mercury-based chlorine units (with capacities) and forecast of announced closures
- Quantity of mercury still in the possession of chlorine units
- Solution adopted to deal with the excess mercury

UNEP started to gather these data from the national authorities but WCC could more efficiently collect them from its regions. Additionally, the UNEP Global Mercury Assessment 2013 mentions that in 2012 the chlor-alkali industry represented about 1% of the global anthropogenic emissions.

WCC - Chlor-Alkali Industry /
Total mercury emissions (air + water + products)
(in USA/Canada, Europe, India and Brazil/Argentina, plus 1 Uruguayan and 3 Russian plants from 2005 onwards)



WCC - Chlor-Alkali Industry /
Number of plants and capacity of mercury electrolysis units
in USA/Canada/Mexico, Europe, Russia, India and Brazil/Argentina/Uruguay





Competitiveness

European chlor-alkali industry still facing headwinds from Eurozone weakness

The Eurozone banking and debt problems continued to weigh down the European chlor-alkali production in 2012 more than initially expected. Caustic soda stocks stayed low, close to their 2011 position. Global competition remains tough both from the US and the Middle East who benefit from cheap energy and feedstock availability in comparison to the EU market. A modest recovery can be expected in 2014 depending on stabilization of the European industrial production and institutional reforms (Source: Cefic Economic Outlook, June 2013).

After a shaky final quarter in 2011 and despite a strong start to the year 2012 for both chlorine and caustic consumption, the European chlor-alkali sector continued to be affected by the deterioration in the EU business climate, the low macro-economic activity and the weak consumption in the PVC market. With 9,701k tonnes, the 2012 European chlorine production was 2.4% below the 2011 level and 9.3% below the record figure of 2007. The 2012 average capacity utilization rate stood at 76.7% compared to 78.7% in 2011.

Germany, Benelux and France remained in the 'top 3' representing together more than 70% of the total 2012 European chlorine production (Germany: 45.3%; Benelux: 15.6%; France: 10.1%).

The weak PVC market tightened the market for chlorine's co-product, caustic soda. With 252k tonnes, the 2012 average monthly stocks were below the 255k tonnes mark of 2011.

The European chlor-alkali industry is still facing headwinds from the low level of activity in the Eurozone. It is exposed to fierce international competition, mainly from the US and the Middle East due to their low-cost energy and feedstock. The EU market stability and a return to moderate positive growth in 2014 will strongly depend on policy makers' ability to solve the EU debt crisis and to boost European competitiveness.

! 70%

Germany, Benelux and France represent together more than 70% of the total 2012 European chlorine production.

Low energy houses: thanks to chlorine based polyurethane chemistry



EUR. CHLORINE PRODUCTION 2012	KTONNES	%
GERMANY	4,393	45.3%
BELGIUM + THE NETHERLANDS	1,514	15.6%
FRANCE	977	10.1%
ITALY	298	3.1%
SPAIN	534	5.5%
FI+NO+SE+PL	747	7.7%
PT+CH+GR+RO+UK	836	8.6%
CZ+SK+HU+AT	401	4.1%
TOTAL EURO CHLOR	9,701	100.0%

**9701
kilotonnes**

European Chlorine
production in 2012

EUR. CHLORINE APPLICATIONS 2012	KTONNES	%
SOLVENTS	279	3.1%
EPICHLOROHYDRIN	510	5.2%
CHLOROMETHANES	453	5.4%
OTHER ORGANICS	911	9.2%
PVC	3,245	33.6%
INORGANICS	1,398	14.1%
ISOCYANATES & OXYGENATES	2,951	29.4%
TOTAL	9,747	100.0%

Euro Chlor represented at SETAC

The 2013 SETAC Europe Congress was held in Glasgow, UK and attended by close to 2000 participants, including environmental scientists, chemists and ecotoxicologists. Representatives from academia, industry and government were at the congress, which took the form of daily presentation and poster sessions taking place over 4 days in May.

Current trends in environmental science were revealed by the platform sessions that included special sessions on Science for Implementing REACH, Risk Assessment of PBTs and Life Cycle Analysis and Sustainability. During a special session on the Stockholm Convention Euro Chlor's Director of Science and Regulatory Affairs Dolf van Wijk presented an industry perspective on the Stockholm Convention's procedure for identification and assessment of POP substances with particular focus on the case of hexachlorobutadiene. Euro Chlor also distributed a selection of Science Dossiers and FOCS from our booth. The Euro Chlor Science Library CDs which consists of all our scientific publications was particularly popular and there was a notable interest in the two Science Dossiers on mercury.



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**Pharmaceuticals and medical equipment:
unthinkable without chlorine chemistry**



**European chlorine applications in 2012
(9,747kilotonnes)**

EUR. CAUSTIC SODA APPLICATIONS 2012	KTONNES	%
SOAPS	352.1	3.7%
MINERAL OILS	128.8	1.3%
BLEACH	370.1	3.9%
PHOSPHATES	143.2	1.5%
OTHER INORGANICS	1,201.4	12.5%
ORGANICS	2,889.0	30.1%
ALUMINIUM AND METALS	580.7	6.0%
RAYON	147.1	1.5%
PULP PAPER CELLULOSE	1,286.6	13.4%
FOOD INDUSTRIES	507.6	5.3%
WATER TREATMENT	482.9	5.0%
MISCELLANEOUS	1,521.7	15.8%
TOTAL	9,611.2	100.0%



European Caustic soda applications in 2012 (9,611.2 kilotonnes)

Chlorinated Solvents Sales 2012

Sales of the chlorinated solvents dichloromethane and perchloroethylene totalled 138,000 tonnes last year, an average decrease of 5% compared with the previous year (145,000 tonnes). 2012 sales figures are at an all-time low, even lower than the figures of 2009 at the peak of the economic crisis (143,000 tonnes).

Dichloromethane sales remained stable in 2012 at 104,500 tonnes compared to 104,000 tonnes in 2011. Despite the EU-wide restrictions on the marketing that affects professional use but not industrial use, dichloromethane remains the most widely-used of the chlorinated solvents within pharmaceutical industry, in adhesives and as a processing agent.

European sales figures of perchloroethylene of ECSA Member companies last year decreased to 34,000 tonnes, an average decrease of 17% compared to the previous year (41,000 tonnes). Perchloroethylene sales are at an all-time low. With only one producer in Europe, the absolute sales of trichloroethylene can no longer be reported

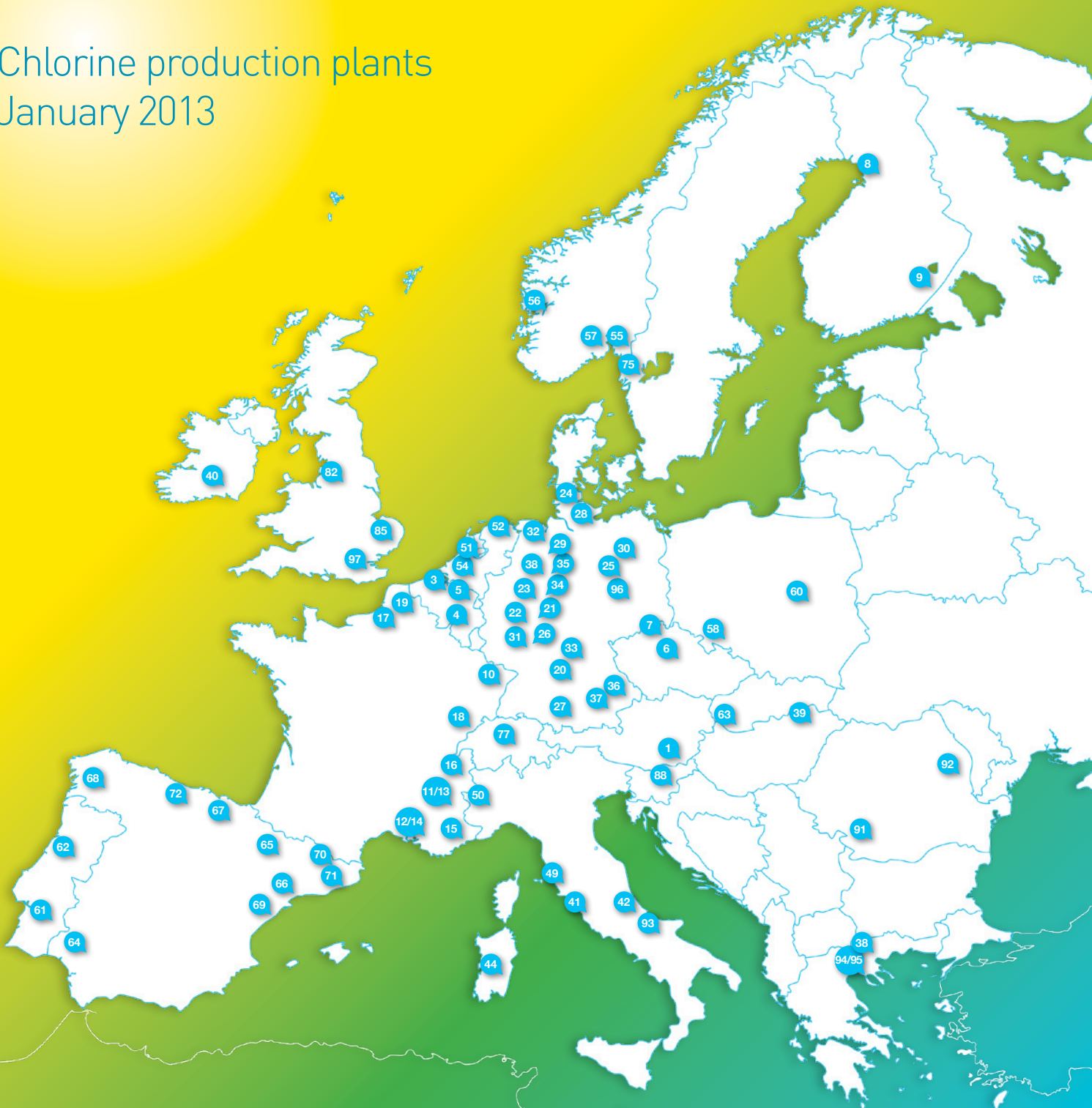
“The cost of electricity needed for producing chlorine is extremely important when it comes to sustainability and competitiveness”

Alistair Steel, Executive Director



Chlorine production plants

January 2013



COUNTRY	NUMBER ON MAP	COMPANY	SITE	NAMEPLATE CAPACITY (000 tonnes chlorine)	Hg	D	M	OTHERS
AUSTRIA	1	Donau Chemie	Brückl	70			70	
AUSTRIA TOTAL				70	0	0	70	0
BELGIUM	3	Solvin	Antwerp	460	110		350	
BELGIUM	4	Solvic	Jemeppe	174			174	
BELGIUM	5	INEOS ChlorVinyls	Tessenderlo *	400	205		270	
BELGIUM TOTAL				1034	315	0	794	0
CZECH REPUBLIC	6	Spolana	Neratovice	135	135			
CZECH REPUBLIC	7	Spolchemie	Usti	61	61			
CZECH REPUBLIK TOTAL				196	196	0	0	0
FINLAND	8	AkzoNobel	Oulu	40	40			
FINLAND	9	Kemira	Joutseno	75			75	
FINLAND TOTAL				115	40	0	75	0
FRANCE	10	PPChemicals	Thann	72	72			
FRANCE	11	Vencorex	Pont de Claix	170		170		
FRANCE	12	Kem One	Fos	300		150	150	
FRANCE	13	Arkema	Jarie	73	73			
FRANCE	14	Kem One	Lavera	341	166	175		
FRANCE	15	Arkema	St Auban	20			20	
FRANCE	16	MSSA	Pomblière	42				42
FRANCE	17	PC Harbonnières	Harbonnières	23	23			
FRANCE	18	Solvay	Tavaux	360			360	
FRANCE	19	PC Loos	Loos	18	18			
FRANCE TOTAL				1419	352	495	530	42
GERMANY	20	BASF	Ludwigshafen	385	170		215	
GERMANY	21	Bayer MaterialScience	Dormagen	480			400	80
GERMANY	22	Bayer MaterialScience	Leverkusen	330			330	
GERMANY	23	Bayer MaterialScience	Uerdingen	250			250	
GERMANY	24	Bayer MaterialScience	Brunsbüttel	210				210
GERMANY	25	Dow	Schkopau	250			250	
GERMANY	26	Vinnolit	Knapsack	250			250	
GERMANY	27	CABB-GmbH	Gersthofen	45			45	
GERMANY	28	Dow	Stade	1585		1030	555	
GERMANY	29	AkzoNobel	Ibbenbüren	125	125			

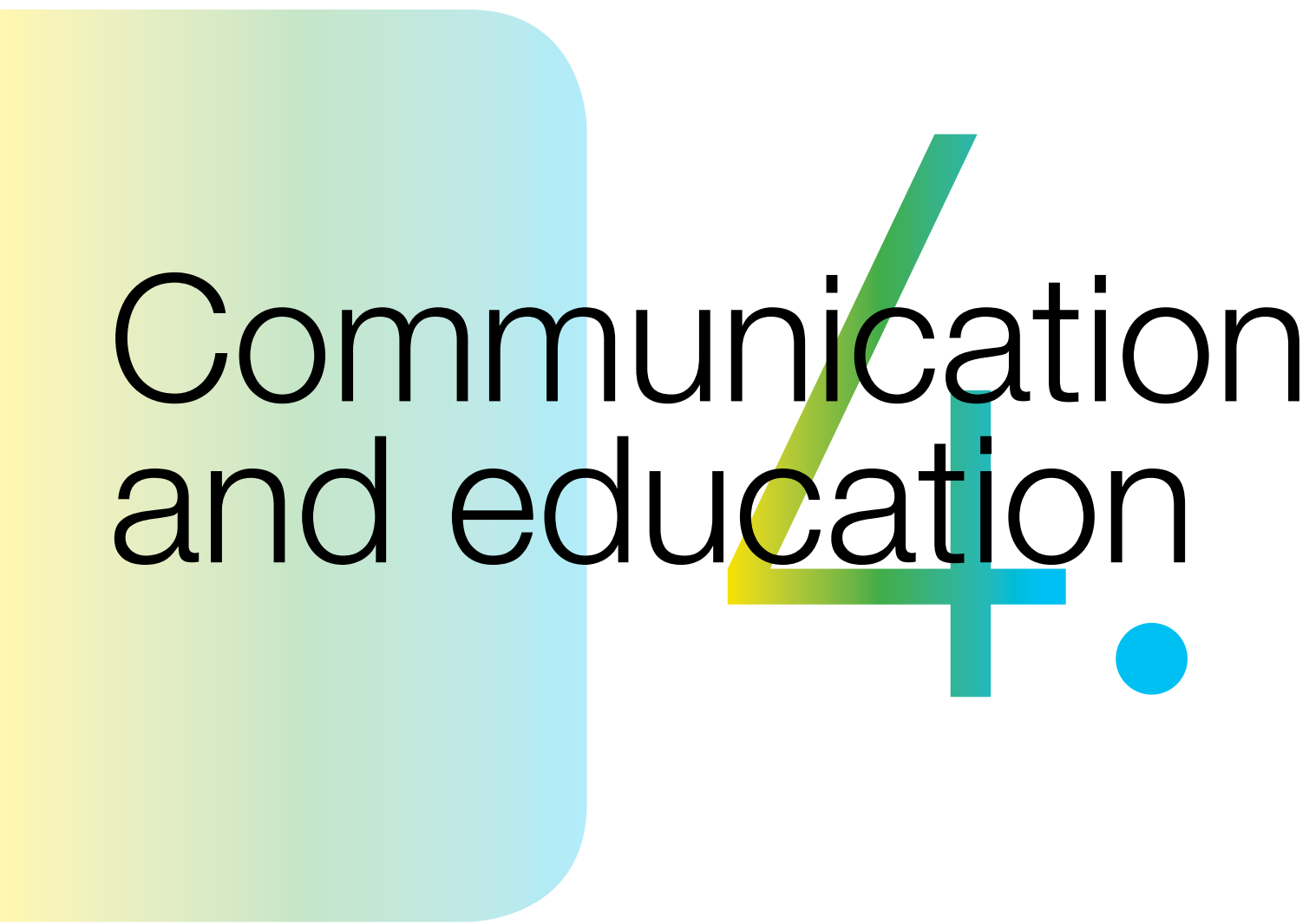
COUNTRY	NUMBER ON MAP	COMPANY	SITE	NAMEPLATE CAPACITY (000 tonnes chlorine)	Hg	D	M	OTHERS
GERMANY	30	AkzoNobel	Bitterfeld	99			99	
GERMANY	31	Evonik Industries	Lülsdorf	137	137			
GERMANY	32	INEOS ChlorVinyls	Wilhelmshaven	149	149			
GERMANY	33	AkzoNobel	Frankfurt	167	167			
GERMANY	34	Solvay	Rheinberg	220		110	110	
GERMANY	35	Vestolit	Marl	260			260	
GERMANY	36	Vinnolit	Gendorf	180			180	
GERMANY	37	Wacker Chemie	Burghausen	50			50	
GERMANY	96	Leuna-Tenside	Leuna	15			15	
GERMANY TOTAL				5177	748	1140	2999	290
GREECE	38	Hellenic Petroleum	Thessaloniki	40	40			
GREECE	94	Kapachim	Inofita Viotias	4			4	
GREECE	95	Unilever Knorr	Marousi	20			20	
GREECE TOTAL				64	40	0	24	0
HUNGARY	39	Borsodchem	Kazincbarcika	291	131		160	
HUNGARY TOTAL				291	131	0	160	0
IRELAND	40	MicroBio	Fermoy	9			9	
IRELAND TOTAL				9	0	0	9	0
ITALY	41	Altair Chimica	Volterra	39			39	
ITALY	42	Solvay	Bussi	25			25	
ITALY	44	Syndial	Assemini	150			150	
ITALY	49	Solvay	Rosignano	150			150	
ITALY	50	Tessenderlo Chemie	Pieve Vergonte	42	42			
ITALY	93	Procter and Gamble	Campochiaro	20			20	
ITALY TOTAL				426	42	0	384	0
THE NETHERLANDS	51	AkzoNobel	Botlek	637			637	
THE NETHERLANDS	52	AkzoNobel	Delfzijl	121			121	
THE NETHERLANDS	54	Sabic	Bergen op Zoom	89			89	
THE NETHERLANDS TOTAL				847	0	0	847	0
NORWAY	55	Borregaard	Sarpsborg	45			45	
NORWAY	56	Elkem	Bremanger	10			10	
NORWAY	57	INEOS ChlorVinyls	Rafnes	260			260	
NORWAY TOTAL				315	0	0	315	0

COUNTRY	NUMBER ON MAP	COMPANY	SITE	NAMEPLATE CAPACITY (000 tonnes chlorine)	Hg	D	M	OTHERS
POLAND	58	PCC Rokita	Brzeg Dolny	125	77		48	
POLAND	60	Anwil	Wloclawek	214			214	
POLAND TOTAL				339	77	0	262	0
PORTUGAL	61	Solvay	Povoa	26			26	
PORTUGAL	62	CUF	Estarreja	116			72	44
PORTUGAL TOTAL				142	0	0	98	44
ROMANIA	91	Oltchim	Rimnicu Valcea	291	186		105	
ROMANIA	92	Chimcomplex	Borzesti	93			93	
ROMANIA TOTAL				384	186	0	198	0
SLOVAK REPUBLIC	63	Fortischem	Novaky	76	76			
SLOVAK REPUBLIK TOTAL				76	76	0	0	0
SLOVENIA	88	TKI Hrastnik	Hrastnik	16			16	
SLOVENIA TOTAL				16	0	0	16	0
SPAIN	64	Ercros	Huelva/Palos	48	48			
SPAIN	65	Ercros	Sabinanigo	30			30	
SPAIN	66	Ercros	Vilaseca	190	135		55	
SPAIN	67	Electroquimica Hernani	Hernani	15			15	
SPAIN	68	Elnosa	Pontevedra/Lourizan	34	34			
SPAIN	69	Ercros	Flix	115	115			
SPAIN	70	Quimica del Cinca	Monzon	31	31			
SPAIN	71	Hispanic	Martorell	218	218			
SPAIN	72	Solvay	Torrelavega	63	63			
SPAIN TOTAL				744	644	0	100	0
SWEDEN	75	INEOS ChlorVinyls	Stenungsund	120	120			
SWEDEN TOTAL				120	120	0	0	0
SWITZERLAND	77	CABB-AG	Pratteln	27	27			
SWITZERLAND TOTAL				27	27	0	0	0
UK	82	INEOS ChlorVinyls	Runcorn	707	277		430	
UK	85	Brenntag	Thetford	7			7	
UK	97	Industrial Chemicals Ltd	West Thurrock	15			15	
UK TOTAL				729	277	0	452	0
GRAND TOTAL				12550	3271	1635	7343	376
PER PROCESS					26.1%	13.0%	58.5%	3.0%

Process: Hg = mercury M = membrane D = diaphragm Others = electrolysis of HCl to Cl₂ or molten salt electrolysis

Non Euro Chlor members are indicated in italics

* Total combined production capacity of the Tessenderlo site Permit = 400 kt Cl₂/yr



Communication and education

Communications Plan being fully deployed

The Euro Chlor "Chlorine Benefits Communications Plan" has now been put fully into action. The Federation has developed a number of communications tools aiming to address numerous messages about the benefits of chlorine-based chemistry to MEPs, influencers in "the Brussels Bubble" and the public at large. These include a Chlorine Benefits website, the Chlorine Journal electronic newsletter, advertisements in specialised media and the launch of viral videos.

Opportunities to shape Brussels influencers' views

Euro Chlor has conducted a comprehensive survey of 100 Members of European Parliament and more than 200 Brussels influencers: Commission officials, Trade Associations, NGOs, journalists, permanent representatives etc. It shows that their views on chlorine-based chemistry are largely undefined but mainly non-negative. Euro Chlor wants to play a role in educating both MEPs and Brussels influencers on the uses of chlorine in everyday items and processes. We want to raise the awareness about the industry and its products.

A specialised international survey bureau questioned. The questions were grouped into three categories:

- To what level do they agree with statements regarding **chlorine-based chemistry**?
- To what level do they know about **chlorine chemistry applications**?
- To what level do they agree with statements regarding **the chlorine industry in Europe**?

The first questioning covered statements such as "chlorine is toxic", "chlorine is harmful to the environment", "chlorine has a wide variety of uses in the production of everyday items" and "the use of chlorine should be more strictly regulated". The MEPs showed themselves to be more opinionated than the Brussels influencers on all views.

! **75%**

The majority of interviewed MEPs (74%) and Brussels influencers (75%) are either unsure or have no opinion on whether they have a favourable impression of the chlorine industry.

There is a clear tendency to perceive **chlorine as a substance** that is dangerous and harmful to the environment and needs regulation rather than to agree on its importance to the European economy or greener energy production (solar cells, fuel cells, wind energy).

When asked about **applications and products** that might be based on chlorine chemistry, only swimming pools, pharmaceuticals and to a certain extent polyurethane insulation materials reached positive scores ranging from 34% (polyurethane) to 67% (swimming pools). Cotton T-shirts, computer chips and solar cells are barely associated with chlorine compounds.

The majority of interviewed MEPs (74%) and Brussels influencers (75%) are either unsure or have no opinion on whether they have a favourable impression of **the chlorine industry**. However a larger number of MEPs (19%) have a favourable impression than influencers (5%). Only a small minority of MEPs (3%) and of influencers (9%) have a negative impression of industry. This presents a clear opportunity to shape perceptions of the industry in the years to come. Euro Chlor will repeat the same survey after a three-year interval, during which the communications plan will be further promoted.

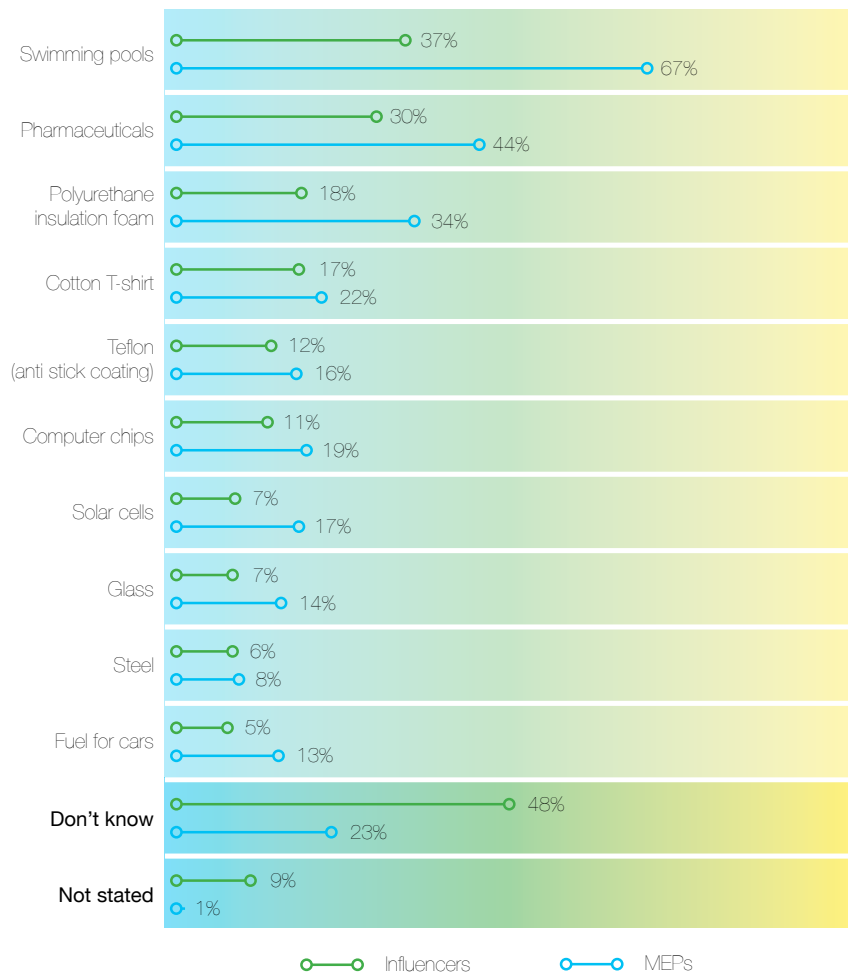
The Euro Chlor survey shows the very limited knowledge that MEPs and Brussels influencers have about chlorine chemistry applications. Of the items thought to use chlorine-based chemistry, only swimming pools and pharmaceuticals are relatively well-known. A quarter of the MEPs and half of the Brussels influencers do not know any chlorine-based applications.

“Euro Chlor clearly has a role to play in educating both MEPs and Brussels influencers on the uses of chlorine to raise the awareness of what the industry and its products do”

**Dirk Clotman,
Communications Manager**

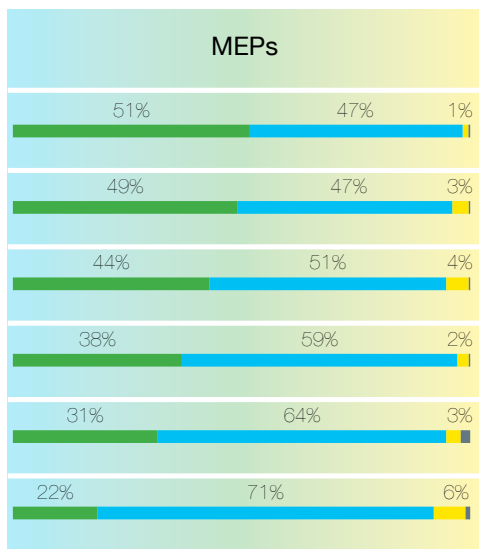


Which of these applications do you think are based on chlorine chemistry?





To what level do you agree with these statements about the chlorine industry?



There should be strict regulations of the use of chlorine in the EU

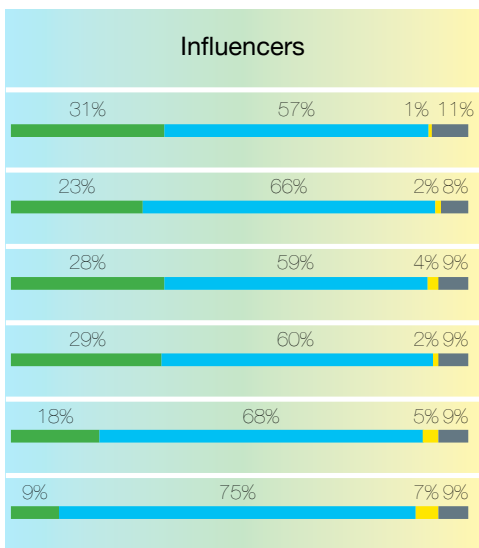
Chlorine has a wide variety of uses in the production of everyday items

Chlorine is a very dangerous substance

Chlorine is harmful to the environment

Chlorine-based products are essential to the European economy

Chlorine-based chemistry is necessary for the production and development of greener energy production technology



There should be strict regulations of the use of chlorine in the EU

Chlorine has a wide variety of uses in the production of everyday items

Chlorine is a very dangerous substance

Chlorine is harmful to the environment

Chlorine-based products are essential to the European economy

Chlorine-based chemistry is necessary for the production and development of greener energy production technology



The high proportion of 'neither disagree nor agree' and 'unsure' answers suggest that both MEPs and European policy influencers have very undefined views on the chlorine industry.



The Boulevard of the 2010 World Exposition in Shanghai was beautifully illuminated by thousands of LED chlorine things

The Euro Chlor Health Working Group makes itself read

Everyone knows that caustic soda is a corrosive substance that may cause severe burns to skin and eyes. Hitherto, however, this chlorine 'co-product' received no attention in the Euro Chlor Health publications. Therefore a new document was dedicated to the control of worker exposure to caustic soda.

The chlorine, caustic soda and mercury guidelines were perceived to be too long, repetitive and insufficiently focused on their target audience. The Health Working Group decided to modernize them by developing a new electronic format that will allow the reader to produce a personalized document containing information with a level of detail that is tailored to their specific needs. The work is in progress.

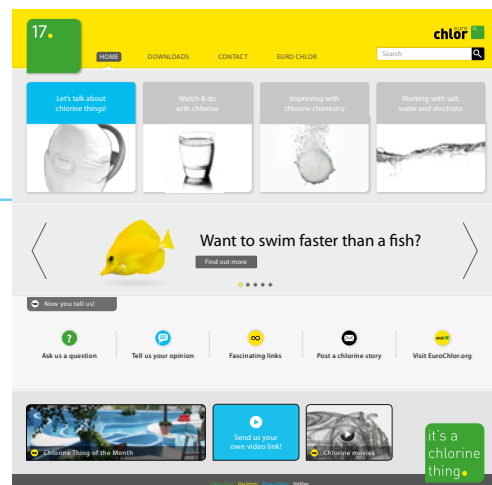
The latest developments related to the alleged link between the development of asthma and swimming in chlorinated pools can be consulted via the Euro Chlor website. In recent news originating from the International Conference on Swimming Pools and Spas (April 2013) several officials from EU Member States and academics confirmed that the evidence was indeed conflicting and that chlorine remained the best disinfectant of choice for swimming pools.

www.chlorinethings.eu

This website is designed to discuss the benefits of chlorine-derived chemistry for mankind and the planet. These are organised into ten basic topics: the environment, green energy, your home comfort, feeding the world, better shelter, modern communication, people's safety, your health, transportation solutions and better sports performance.

Special focus will be given to member companies' achievements in efficient energy use, sustainability, product development and technological progress.

Special attention has also been paid to interactivity: site visitors are able to leave their remarks, questions and suggestions and these will regularly be commented on and answered by Euro Chlor Communications. The site will continue to grow organically and will act as a central platform for chlorine chemistry benefits communication.



The new website chlorinethings.eu is the chlorine benefits site

! Advertisements

Part of the Chlorine Benefits Communications Plan is a series of advertisements. They show and explain applications where the input of chlorine-based chemistry is mostly unknown, like life-saving nylon airbags, pharmaceuticals and modern insulation foams. Yes, they too are often chlorine things. These advertisements will be published in important European print and electronic media.

The Chlorine Journal

Another element of the Communications Plan will be the illustrated electronic newsletter called "The Chlorine Journal". We send it out several times per year to selected audiences of Brussels' opinion makers. It presents short, interesting stories about chlorine chemistry, the European chlor-alkali industry and examples of corporate sustainability.

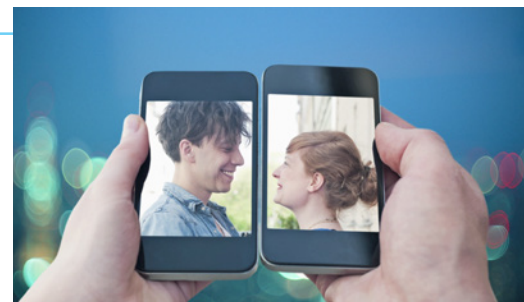
Member companies can also send The Chlorine Journal to their staff, in order to include them in the chlorine benefits communication wave.

“Regulation should be appropriate and smart”

This is one of the key messages expressed in [an interview with Euro Chlor Chairman Andreas Amling and Executive Director Alistair Steel](#). In the video of the interview, they discuss key issues for Euro Chlor. The short film, that has been online since early April, is viewed dozens of times every week. Both gentlemen explain how important the triangle of sustainability - competitiveness - regulation is for the chlor-alkali industry. They emphasise the crucial role of energy in the chlorine production process and state the importance for industry of having a consistent regulatory framework that doesn't change every few years.



Executive Director Steel (left) and Chairman Amling discuss chlorine issues online



Chlorine technology things bring people closer

Viral videos about chlorine things

Part of Euro Chlor's new corporate identity is the baseline "It's a chlorine thing". We use it more and more to enhance people's awareness of the massive presence of chlorine chemistry in everyday life. The public just does not know how much chlorine chemistry does for all of us.

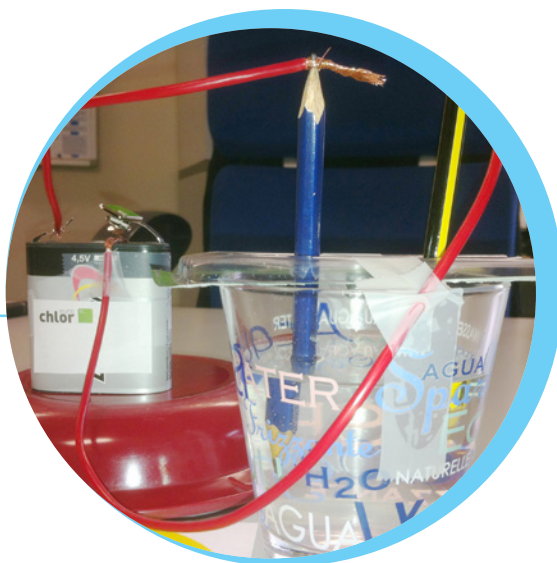
Hence the plan to produce several short but powerful videos about chlorine things - videos that have the potential to go viral on the internet and to be viewed by many. This interesting exercise started with [a first video on communication](#). Yes, it's a chlorine thing. Whether you play a record (good old vinyl is back!) or a DVD, or whenever you use an MP3-player, smartphone or tablet with the inevitable silicon microchip inside: you're using chlorine things. We want people to know. We want the public to appreciate this.

More videos are planned. From health care to construction and transportation, home comfort to sports, life is full of chlorine things.

Produce your own chlorine!

This is not a gag: Euro Chlor shows interested web visitors how they can produce small quantities of gaseous chlorine with just two pencils and a 4.5 Volt battery. [A cheerful educational animation](#) on the website shows how it can be done. The reactor is a glass of salt water and two double-sharpened pencils are used as electrodes. Seconds after the circuit to the battery has been closed, the characteristic "swimming pool odour" can be smelled.

Through this simple experiment, Euro Chlor aims to document that in the electrolysis process electric power is in fact a true raw material.



© Dirk Cloiman

A battery, two pencils and a glass of salt water: you've got an electrolysis!

Euro Chlor website highly popular

With 206,000 page views in 61,000 visits by 40,000 unique viewers per year, the Euro Chlor corporate website remains a premium communication tool. On average, visitors remain on the site for nearly four minutes and they consult 3.4 pages.

No less than 63% of all visitors are newcomers, which means that the site ranks highly in searches for "chlorine" and related key words. The majority are American visitors, followed by British, German and French citizens. The most popular pages are found in "The chlorine universe" chapter (85,000 page views), in which the animations of the three production process

technologies are extremely sought after. The safety/technology chapter is the second most consulted (17,000 views), and the chlorine industry issues pages rank third (14,000 page views/year). Although chlorinated solvents only represent a limited product family, their web pages are consulted nearly 10,000 times per year. More than 10,000 documents are acquired every year through the Download Centre.

Every month, nearly 100 visitors want to know how they can produce small quantities of chlorine in ... their kitchen. They can do this by watching the instructive animation on the home page.

206,000

pages viewed each year

10,000

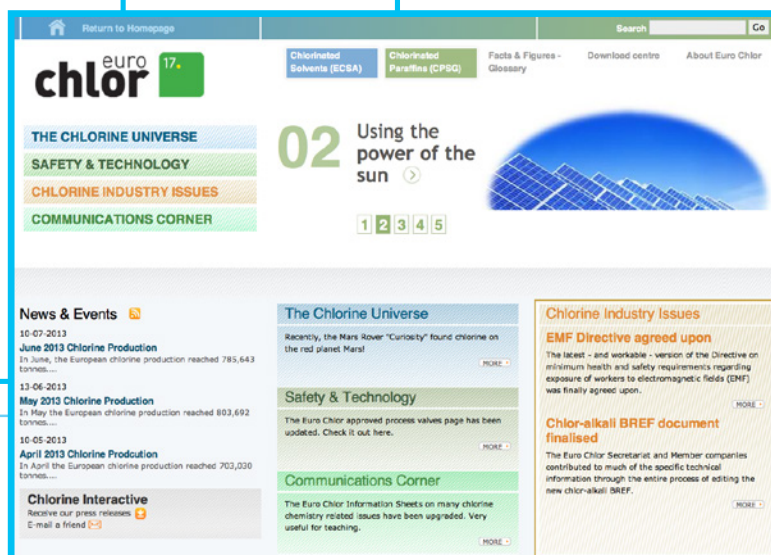
Euro Chlor documents downloaded each year

3.4

pages viewed per visit

100

visitors/month want to produce chlorine in the kitchen



www.eurochlor.org

40,000

unique viewers per year

63%

of the visitors are newcomers

4

minutes per visit



in **21**
countries

34
Full members



13
Management
Committee
members




euro **17.**
chlor

365
days working
with & for you

68
Manufacturing
locations



45
Associate
members



48
Technical
correspondents



29
Working
groups

The Euro Chlor Federation

In Europe, 34 Members of Euro Chlor produce chlorine on 68 manufacturing locations in 21 countries. However, almost 2,000,000 jobs are directly or indirectly related to chlorine and its co-product caustic soda when the numerous downstream activities are taken into account.

Apart from producers, Euro Chlor also has 45 Associate Members and 48 Technical Correspondents. These include national chlorine associations and working groups, suppliers of equipment, materials and services as well as downstream users and producers outside Europe.

Euro Chlor was founded 60 years ago (1953) as a production-oriented technical organization. The association was restructured in 1989 in order to provide the sector with strengthened scientific, advocacy and communications capabilities. Since then, a strong focus has been placed on sound science coupled with continual health, safety and environmental improvements complemented by open and transparent communications with key stakeholders.

Euro Chlor underlines that one of its major objectives is the full recognition by Europe and the rest of the world of the benefits of chlorine chemistry to society. The Communications Plan has been systematically designed to underline this core message.



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(1st July 2013)

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- Applitek NV/SA
www.applitek.com
- Bluestar (Beijing) Chemical Machinery Co Ltd
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Euro Chlor provides a focal point for the chlor-alkali industry's drive to achieve a sustainable future through economically and environmentally sound manufacture and use of its products. Based in Brussels, at the heart of the European Union, the federation works with national, European and international authorities to ensure that legislation affecting the industry is workable, efficient and effective. Euro Chlor communicates in a transparent way with all stakeholders and systematically highlights chlorine chemistry benefits.

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