Chlor-alkali industry review

2019-2020

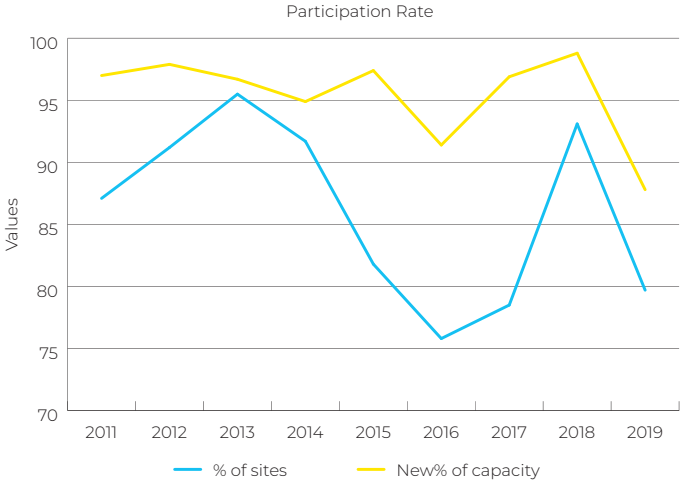
euro chlor 17

A sector group of Cefic

GEARING UP TO LAUNCH OUR EUROPEAN CHLOR-ALKALI STRATEGY FOR 2050...

Note: we have revamped this year's Industry Review to reflect our evolving priorities. This includes marking the seven key parameters reported in our Sustainability Programme since 2001 with an  *icon so they can be compared with previous editions. Under the EU's new Green Deal, our commitment to sustainability remains as important as ever.*

However, this year's contribution from our members (to the 2019 Euro Chlor Sustainability Questionnaire for these seven key parameters) was lower than previous years (covering 88% of Euro Chlor member capacity from 27 companies at 47 sites as of end-July 2020). This may be due to the COVID-19 crisis. The Euro Chlor secretariat will continue its efforts to improve the participation rate and any extra data received will be updated dynamically on https://chlorineindustryreview.com.



Read more inside about the 2019-2020 highlights for Euro Chlor's key topics.

UNDERPINNING THE GREEN DEAL...

The past year has been all about new beginnings and adapting to significant change.

We have European institutions whose priorities are shaped by citizens' desire for a 'greener' Europe. From this, we have seen the EU's 'Green Deal' that covers everything from energy policy, climate neutrality, circular economy, zero pollution and many other elements of relevance to our sector.

With this year's far-reaching COVID-19 crisis, the Green Deal has now evolved into a 'Green Recovery plan' and this will impact the entire chemical industry in the coming years. We have pre-empted the Green Deal with our new Mid-Century Strategy for a Sustainable Chlor-Alkali Industry (MCS*), and we will further respond together with Cefic and other key players.

COVID-19 also introduced new challenges, bringing new ways of living and working as the world adapts to its impact. I am personally very proud of how our membership stepped up during the crisis, donating chlor-alkali based disinfectants, protective equipment and resources to help fight the virus. This reminded everyone just how crucial our products are for society. I am also proud of my team, who courageously continued working from home and found ways to either postpone live events, or turn them into successful virtual meetings. We have now all seen each other's home offices, living rooms and kitchens and the moral support we gave each other has created bonds that will never be broken.

I hope you enjoy reading this report of our activities from the past year (September 2019-August 2020). To ensure that we remain a safe, competitive and green part of Europe's future, we are all enthusiastic about our new MCS. Even in these unprecedented times, I know for sure that we are up to the challenge and have the right tools in place to tackle it.

MARLEEN PAUWELS
Managing Director

*Read more in our sister publication on the MCS.

https://www.eurochlor.org/mcs

...WITH A NEW EUROPEAN CHLOR-ALKALI STRATEGY FOR 2050

Over the past two years as Euro Chlor Chairman, I have worked with our members to ensure that the Euro Chlor ethos of a safe, sustainable and successful industry for Europe was maintained. However, as the late Lauren Bacall once noted, 'standing still is the fastest way of moving backwards in a rapidly changing world'. We need to keep moving forwards to ensure that our sector remains a valued part of Europe's daily life.

As such, we are proud to present the Euro Chlor MCS, which gives us a direction that will ensure that a safe, competitive and green European chlor-alkali industry is here for the benefit of Europe in 2050. Building on the Cefic Mid-Century Vision (MCV), my speech from 2018, and the work of Roland Berger, our new strategy helps to plot a course for European chlor-alkali over the next three decades.

The MCS is made up of a new Vision, Mission and has four key priority elements: Euro Chlor as a Safety Leader, Competitive Supplier, Circularity Champion and Climate Neutral Player. Within these priorities are individual activities that will be addressed in the coming years to help us thrive. These will be expanded on via the various Euro Chlor Working Groups and Committees.

Whilst we do not imply that we have all the answers, we want to be able to play our part in a 'greener' future for Europe and in contributing to a better world. The work will also require the continued commitment and efforts of our members. I know we can rely on them, and on our new Chairman (Wouter Bleukx, Inovyn), to achieve this. Our future is in safe hands.

JÜRGEN BAUNE
Chairman of the Management Committee

Thanks to Jürgen for his efforts in initiating the Euro Chlor MCS. Marleen is right, we are in challenging times. However, I am eager to start work on a strategy that not only defines what our industry could look like in 2050, but also outlines what is needed to get there. I look forward to working with the secretariat to continuously improve Euro Chlor's functioning and with our members to create this even safer, more competitive and greener chlor-alkali industry for Europe.

WOUTER BLEUKX
Vice-Chairman of the Management Committee

PROCESS INCIDENTS AND REPORTING

Safety will remain Euro Chlor's top priority in the coming years.

In 2019, the process incidents and losses amounted to 3.15 incidents per million tonnes of chlorine production (up from 2.30 in 2018). This translates to 28 process incidents in absolute numbers (reported via the Sustainability Questionnaire).

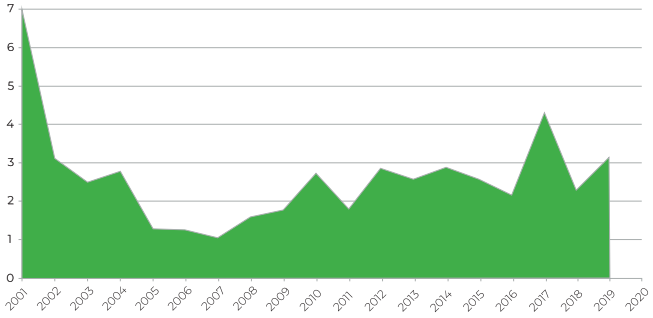
In addition to the increase in process incidents and losses, we see a decrease in incident reporting. None of these figures are alarming, due to the fact that the level of process incidents has stabilised over recent years following the improvements made during the first years of the Sustainability Programme.

Nevertheless, these latest developments do not meet our goal of continuous improvement with a zero vision. Therefore, both the Euro Chlor secretariat and membership will work hard towards a further decrease in incidents and an increase in reporting.

Euro Chlor's MCS priority of becoming a Safety Leader in the chemical industries will only be possible if member companies consistently share experiences. Communicating and learning from each other in the fields of health and safety has always been a Euro Chlor strength and remains the only way forward to improve. Therefore, we will continue to encourage our members to invest time and effort in sending us detailed incident reports.

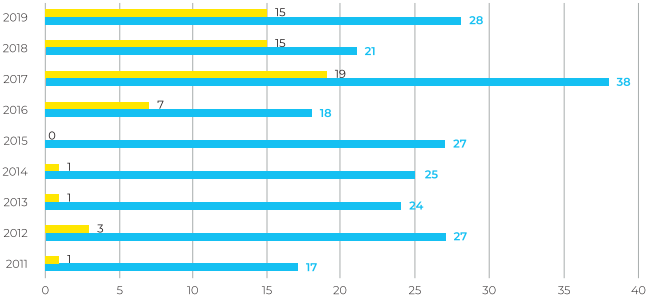
Process incidents and losses

Number per million tonnes of chlorine produced



Incident reporting

Number of incident reports Number of process incidents



> Safety stays at the top of our agenda as reflected in our new Mid-Century Strategy. It is our goal to become a Safety Leader in the chemical industries.

SAFETY

TON MANDERS
Technical and Safety Director

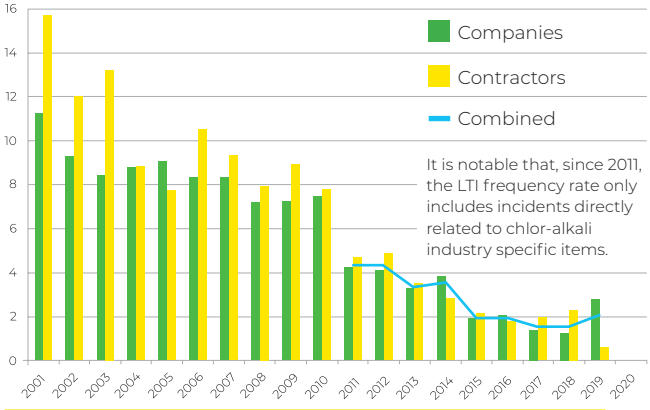
OCCUPATIONAL SAFETY

Lost Time Injuries (LTIs) for member company staff increased to 2.80 per million working hours in 2019 from 1.26 in 2018. On the other hand, the contractor LTI numbers showed an improvement by decreasing from 2.33 to 0.59 per million working hours.

To make the figures more comparable, this year we have also looked at the total number of LTIs (combined for staff and contractors), which shows an overall rise in 2019 compared to 2018. Investigations are ongoing into how to return to the positive trend we saw during previous decades and to continue improving.

Chlor-alkali LTI frequency rate

Number of LTI incidents per million working hours



Increase in total number of LTIs (members of staff and contractors combined).

Increase in the number of process incidents and losses since last year.

Slight decrease in the coverage rate of incident reports.

INTERACTIVE TRAINING GAME UPDATE

To assist our members in their efforts and help support our Safety Initiative, in June 2019 Euro Chlor began a project with the University of Delft (NL) to develop an interactive 'game' for use as a process safety learning tool by our members. This development work continued over the past 12 months and a prototype is now ready for testing by members. Unfortunately, this testing has been delayed due to the social distancing restrictions of the COVID-19 crisis and is now foreseen in the autumn of 2020.

The overall aim of this game is to reduce the number of incidents in chlorine plants. To achieve this, the game helps players to improve their knowledge and decision making, as well as reinforcing the importance, translation and application of this knowledge. The chosen target group is operators, shift leaders and engineers. Maintenance and plant managers should also benefit to create understanding and general awareness. The game is to be run in groups of 5 to 10 players, who sit together and discuss decisions and 'solve' incidents. Whilst the prototype is currently in the shape of a board game with scenarios, digital systems could be add added laterer.

HEALTH WORKING GROUP TACKLING THE ISSUES OF EMFS, STRESS AND BURNOUT

Following on from Directive 2013/35/EU of the European Parliament and of the Council on reducing occupational exposure to electromagnetic fields (EMFs), the medical experts in Euro Chlor's Health Working Group (HWG) were still experiencing concern from their colleagues about these EMFs. Specific questions were fielded as to whether EMFs associated with electrolysis units could give adults cancer, harm unborn children or impact implanted medical devices.

To help address these concerns and enhance the previously launched posters and training presentations, the group has developed training videos that reassure workers that there is no link between EMFs from chlor-alkali units and cancer. The videos remind pregnant workers and people with implanted medical devices to seek further information as there may be places in the plant where they should not go. They are available in English, French, German, Spanish, Italian and Dutch via the Health Documents library on the Euro Chlor Sharepoint or eurochlor@cefic.be.

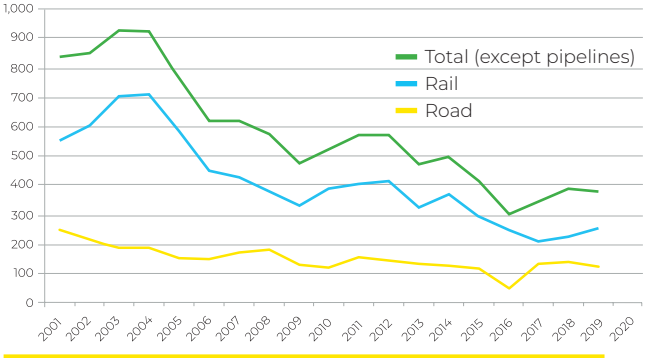
The group is also finalising training material on how to identify and protect people from stress and burnout. Whilst not unique to chlor-alkali production, this advice is designed to help protect people from this ever-increasing issue. This will hopefully be available in the first half of 2021.

TRANSPORTATION

On transportation, the total amount of chlorine carried via road or rail remained stable in 2019 compared to 2018. It represents around 4.3% of overall chlorine production. We are happy to mention that, as in previous years, no (chlorine) transport incidents were reported in 2019.

Chlorine transported outside industrial sites

Transported amount in 1,000 tonnes of Cl_2



LOADING AND UNLOADING UPDATE

Euro Chlor members have expressed a need to focus more on improving the transport safety of all chlor-alkali related chemicals, not just chlorine. This has led to a safety commitment on the safe loading and unloading of chlorine, caustic soda, caustic potash, hydrochloric acid, sodium hypochlorite and sulfuric acid. This commitment contains a set of rules outlining how our members can enhance the safe loading and unloading of these chemicals at their own sites, customers and transport companies.

SAFETY COMMUNICATION

Euro Chlor's Safety Initiative work over the past year has also advanced. This includes the revamping of our quarterly safety newsletter to allow members and partners to easily see the latest Incident Reports, safety discussions in every relevant meeting and the updates of several recommendations.

No change in the amount of chlorine transported from production sites.

83.3%

of European chlor-alkali uses membrane-based production technology.

MEMBER INVESTMENTS CONTINUED DESPITE TURBULENCE AND NEW PARTNERS JOINED

Several significant investments were completed by members during 2019/2020 along the entire chlor-alkali value chain. In addition, the Euro Chlor family expanded further with new partners joining. These are reported on the Euro Chlor website at https://www.eurochlor.org/news-events/member-news.

3 new partners joined in the last 12 months.

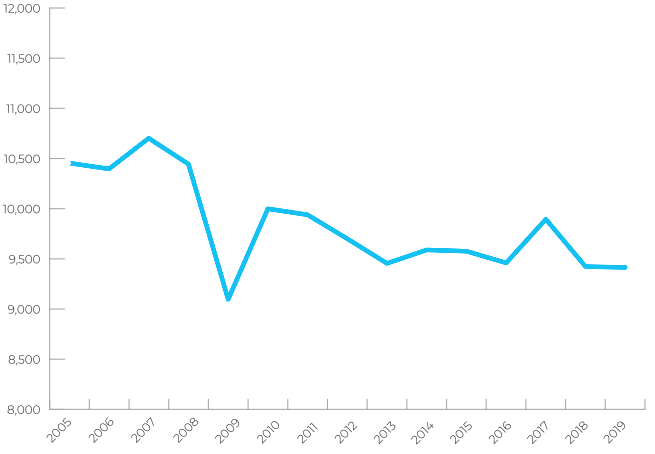
CHLORINE PRODUCTION 2019

According to Cefic figures, 9,416 kilotonnes of chlorine were produced in 2019, which is almost equal to the 2018 production level. Meanwhile, overall production in the EU chemical sector decreased by 1.1% in 2019, which means that chlorine production performed better.

However, the capacity expansions implemented over the last year (162 kilotonnes or 1.4%) did not materialise, which led to a drop in the utilisation rate from 82.3% in 2018 to 81.0% in 2019.

Chlorine production level

In kilotonnes per year



> Euro Chlor members have adapted to the COVID-19 crisis over the past year whilst simultaneously adopting new sustainability measures, showing our commitment to remaining a vital part of Europe in 2050.

COMPETITIVENESS

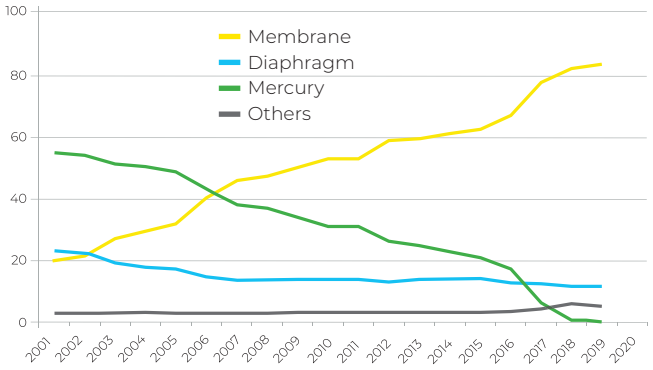
JÜRGEN BAUNE
Chairman of the Management Committee

MANUFACTURING TECHNOLOGY

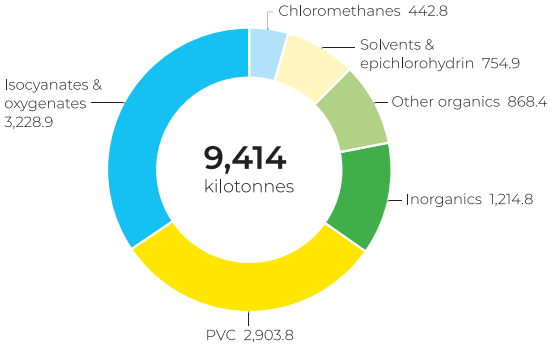
Membrane is the dominant technology to produce chlor-alkali in Europe, with 83.3% of the installed capacity in Europe being based on this. Diaphragm technology, meanwhile, represents 11.6% of capacity and the remaining 5.1% covers chlorine-alcoholate production, hydrochloric acid conversion to chlorine, metal production and chlorine and caustic production without hydrogen as a by-product.

Chlorine manufacturing process

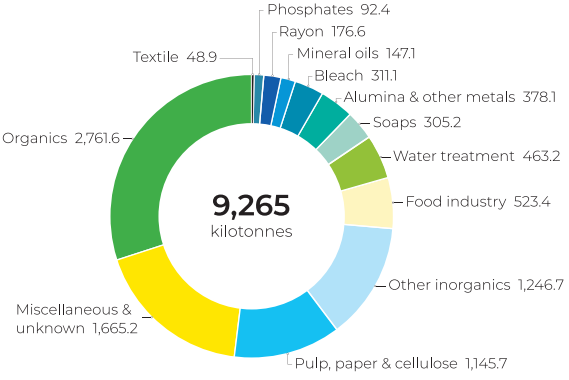
% of installed capacity at the end of production year



EUROPEAN CHLORINE APPLICATIONS 2019



EUROPEAN CAUSTIC SODA APPLICATIONS 2019



CHLORINE PRODUCTION PLANTS

1st January 2020 capacities

Process:

D = diaphragm

M = membrane

"Others" includes HCl electrolysis, ODC, molten salt electrolysis, alcoholates.

Non Euro Chlor members are indicated in italics.

	Country	Company	Site	**Total** (kilotonnes chlorine)	D	M	Others
1	Austria	Donau Chemie	Brückl	75		75	
Austria Total				**75**	**0**	**75**	**0**
3	Belgium	INOVYN	Lillo	500		500	
4	Belgium	INOVYN	Jemeppe	174		174	
5	Belgium	Vynova	Tessenderlo	400		400	
Belgium Total				**1,074**	**0**	**1,074**	**0**
7	Czech Republic	Spolchemie	Ústí nad Labem	69		69	
Czech Republic Total				**69**	**0**	**69**	**0**
9	Finland	Kemira	Joutseno	75		75	
Finland Total				**75**	**0**	**75**	**0**
10	France	Vynova PPC	Thann	42		42	
11	France	Vencorex	Pont de Claix	119		119	
12	France	KEM ONE	Fos	333	178	155	
13	France	Arkema	Jarrie	75		75	
14	France	KEM ONE	Lavera	341		341	
16	France	Arkema	Saint-Auban	20		20	
16	France	MSSA	Pomblière	42			42
18	France	INOVYN	Tavaux	370		370	
19	France	PC Loos	Loos	35		35	
France Total				**1,377**	**178**	**1,157**	**42**

	Country	Company	Site	**Total** (kilotonnes chlorine)	D	M	Others
20	Germany	BASF	Ludwigshafen	595*			
21	Germany	Covestro	Dormagen	480		400	80
22	Germany	Covestro	Leverkusen	390		390	
23	Germany	Covestro	Krefeld-Ürdingen	260		234	26
24	Germany	Covestro	Brunsbüttel	210			210
25	Germany	Dow	Schkopau	252		252	
26	Germany	Vinnolit	Hürth-Knapsack	250		250	
27	Germany	CABB GmbH	Gersthofen	55		55	
28	Germany	Dow	Stade	1,623	1,025	598	
29	Germany	Neolyse Ibbenbüren GmbH	Ibbenbüren	82		82	
30	Germany	Nouryon	Bitterfeld	99		99	
31	Germany	Evonik Industries	Lülsdorf	77			77
33	Germany	Nouryon	Frankfurt	283		283	
34	Germany	INOVYN	Rheinberg	220	110	110	
35	Germany	VESTOLIT	Marl	260		260	
36	Germany	Vinnolit	Gendorf	180		180	
37	*Germany*	*Wacker Chemie*	*Burghausen*	*55*		*55*	
96	*Germany*	*LEUNA-Harze*	*Leuna*	*15*		*15*	
Germany Total				**5,386**	**1,135**	**3,263**	**393**
94	Greece	Kapachim	Inofita Viotias	10		10	
Greece Total				**10**	**0**	**10**	**0**
39	Hungary	BorsodChem	Kazincbarcika	480		384	96
Hungary Total				**480**	**0**	**384**	**96**
40	Ireland	Micro Bio	Fermoy	11		11	
Ireland Total				**11**	**0**	**11**	**0**
41	Italy	Altair Chimica	Saline di Volterra	75		75	
42	Italy	Società Chimica Bussi	Bussi	18		18	
44	Italy	Ing. Luigi Conti Vecchi	Assemini	25		25	
49	Italy	INOVYN	Rosignano	150		150	
99	Italy	*Halo Industry*	*Torviscosa*	*24*		*24*	
93	Italy	Fater	Campochiaro	20		20	
Italy Total				**312**	**0**	**312**	**0**
51	The Netherlands	Nouryon	Botlek	637		637	
52	The Netherlands	Nouryon	Delfzijl	121		121	
54	*The Netherlands*	*Sabic*	*Bergen op Zoom*	*89*		*89*	
The Netherlands Total				**847**	**0**	**847**	**0**

**Distribution unknown.*

	Country	Company	Site	**Total** (kilotonnes chlorine)	D	M	Others
55	Norway	Borregaard	Sarpsborg	40		40	
56	*Norway*	*Elkem*	*Bremanger*	*11*		*11*	
57	Norway	INOVYN	Rafnes	315		315	
Norway Total				**366**	**0**	**366**	**0**
58	Poland	PCC Rokita	Brzeg Dolny	186		186	
60	Poland	Anwil	Włocławek	195		195	
Poland Total				**381**	**0**	**381**	**0**
62	Portugal	Bondalti Chemicals	Estarreja	142		94	48
Portugal Total				**142**	**0**	**94**	**48**
91	Romania	Oltchim (Chimcomplex)	Râmnicu Vâlcea	100		100	
92	Romania	Chimcomplex	Borzeşti	102		102	
Romania Total				**202**	**0**	**202**	**0**
63	*Slovak Republic*	*Fortischem*	*Nováky*	*70*		*70*	
Slovak Republic Total				**70**	**0**	**70**	**0**
88	*Slovenia*	*TKI Hrastnik*	*Hrastnik*	*16*		*16*	
Slovenia Total				**16**	**0**	**16**	**0**
64	Spain	Electroquímica Onubense	Huelva/Palos de la Frontera	44		44	
65	Spain	Ercros	Sabiñanigo	45		45	
66	Spain	Ercros	Vila-seca	172		172	
67	Spain	Electroquímica de Hernani	Hernani	30		30	
100	Spain	Biomca Química	Santa Cruz de Tenerife	5		5	
70	Spain	Química del Cinca	Monzón	45		45	
72	Spain	Bondalti Chemicals	Torrelavega	68		68	
Spain Total				**409**	**0**	**409**	**0**
75	Sweden	INOVYN	Stenungsund	123		123	
Sweden Total				**123**	**0**	**123**	**0**
77	Switzerland	CABB AG	Pratteln	47		47	
Switzerland Total				**47**	**0**	**47**	**0**
98	UK	Runcorn MCP	Runcorn	430		430	
85	UK	Brenntag	Thetford	7		7	
97	UK	Industrial Chemicals Ltd	West Thurrock	44		44	
UK Total				**481**	**0**	**481**	**0**
Grand Total				**11,953**	**1,313**	**9,466**	**579**
Per process					**11.6%**	**83.3%**	**5.1%**

Slight increase in energy consumption.

ENERGY AND CLIMATE CHANGE HIGHLIGHTED AS MOST RELEVANT GREEN DEAL TOPICS FOR EURO CHLOR

The European Commission (EC)'s Green Deal was launched at the end of 2019. It includes the EU's climate ambitions for 2030 and 2050, expectations on clean, affordable and secure energy and on sustainable and smart mobility, an industrial strategy and a zero-pollution ambition for a toxic-free environment. The Green Deal will induce a far-reaching package of elements, of which some will have a particular impact on our chlor-alkali sector. That is why Euro Chlor is working closer than ever with Cefic on many relevant topics.

Meanwhile, Euro Chlor's Regulatory Affairs Committee (RAC) has been determining how to promote the key elements of Euro Chlor's new Mid-Century Strategy (MCS) via positive advocacy whilst considering the above Green Deal concepts, which are now evolving into the Green Recovery. In one key RAC meeting, the different elements were examined for their impact on our sector and other key stakeholders that may need to be collaborated with. There were no surprises. Energy and climate change and the initiatives taken regarding a zero-pollution ambition for a toxic-free environment came out as very important, followed by smart mobility and circularity.

Euro Chlor has of course been focusing on energy since our very first Sustainability Programme in 2001, with energy consumption and hydrogen use being two of the key measures tracked.

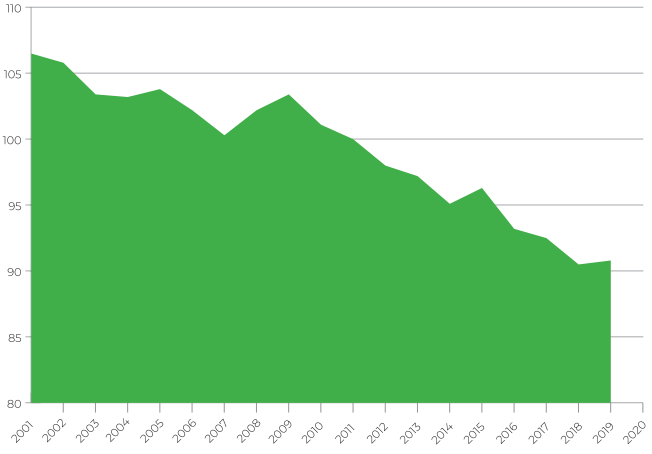
ENERGY CONSUMPTION

Energy consumption increased slightly in 2019 to 90.8% versus the 2011 reference from the 2018 level of 90.5%.

The decline seen over the last years mainly resulted from the phase-out of mercury technology. In the years to come, energy consumption levels are set to stabilise as there may be limited room to further improve the energy efficiency levels. This is especially true as improvements in modern membrane technology are fast approaching the thermodynamic limits of the process.

Primary fuel energy consumption

Percentage with respect to 2011



EURO CHLOR LAUNCHES THE HYDROGEN TASK FORCE

Hydrogen is high on the political agenda as part of the Green Deal/ Green Recovery plans. This was confirmed by several recent high-level EU initiatives, including the European Industrial Strategy and the formation of a new European Clean Hydrogen Alliance. Following the success of several other industrial alliances (such as those involving plastics and batteries), this new Alliance brings investors together with governmental, institutional and industrial partners. It builds on existing work to identify technology needs, investment opportunities and regulatory barriers and enablers.

The EC has also launched an EU Hydrogen Strategy, which sets out the EU's clear ambition to become climate neutral by 2050 by redesigning the current energy system with hydrogen playing a major role. Hydrogen currently accounts for less than 2% of the energy supply but, by 2050, this could rise to 12-14% according to this strategy, showing scope for innovation, job creation and growth.

As the European chemical industry is a major consumer and producer of hydrogen, it is of vital importance that Cefic is part of the hydrogen discussion. In order to become a valued partner, our industry must investigate the possibilities and barriers to hydrogen. Only then can Cefic become a respected knowledge hub within the hydrogen debate.

To be part of the hydrogen discussion, the Euro Chlor secretariat agreed to manage a new Hydrogen Task Force, open for all Cefic members, to serve as a platform for discussion and data collection.

More specifically, this Task Force will map the potential of hydrogen and perform a gap analysis on preconditions to exploit this potential within the chemical sector. It will also identify and involve other stakeholders. Given Euro Chlor's technical experience with the electrolysis process and our production/use of hydrogen, we are leading this Task Force on behalf of Cefic under our Climate Change & Energy Committee.

The kick-off meeting was held in June 2020 and was well-attended with representatives of a wide variety of sectors, reflecting the great interest in the subject. The participants agreed on the need for a comprehensive overview of current hydrogen production (either intentional or as by-product) and consumption, an analysis of the pros and cons of the different production routes and the potential applications of hydrogen. There was also agreement that any activities must take place with close attention to, and interaction with, other stakeholders across different sectors.

Euro Chlor is also participating in a Hydrogen for Europe study to assess the contribution of clean hydrogen to the secure and affordable decarbonisation of the EU energy sector. Deloitte, SINTEF and IFPEN form the Research Consortium responsible for carrying out this study.

> With new EU regulatory priorities, our sector faces challenges. We monitor these via Euro Chlor's climate change and energy-related groups, which will help us contribute to Europe's climate neutrality goals.

CLIMATE AND THE ENVIRONMENT

KRISTOF MAY
Regulatory Affairs Manager

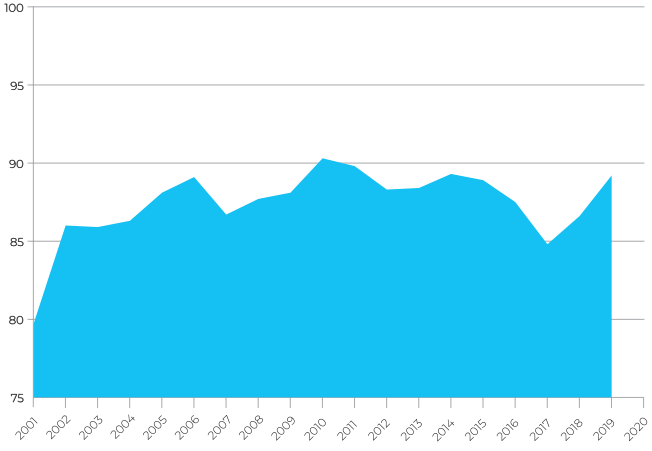
HYDROGEN USE

Meanwhile, Euro Chlor member companies have increased their use of hydrogen from 86.6% in 2018 to 89.2% in 2019.

Considering that hydrogen is an important chemical for the climate neutral economy, the 89.2% utilisation rate of hydrogen from chlor-alkali production remains relatively low. This may change over time as demand for hydrogen increases, and more application solutions become available. Euro Chlor continues to strive towards full utilisation, and this will also be a key feature of our MCS activities.

Hydrogen used

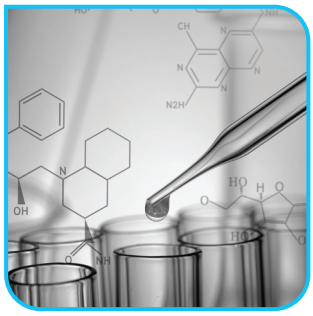
Percentage of production



EURO CHLOR INPUT IN IED FOCUS GROUPS

This year, Euro Chlor has participated in the EC's Industrial Emissions Directive (IED) Evaluation Focus Groups, namely their assessment of IED 2010/75/EU. This also included attending the final event on the IED evaluation in December 2019.

2.6%
increase in hydrogen use versus last year.



EURO CHLOR RESPONDS TO ETS STATE AID GUIDELINES CONSULTATION

Euro Chlor continued to help members remain competitive on energy by responding to the EC's public consultation on draft ETS State Aid Guidelines in March 2020 via our Energy Task Force and through Cefic.

The EC is currently revising the conditions under which Member States are allowed to grant state aid to compensate for the cost of indirect CO2 emissions, for the fourth period of the EU Emission Trading System (2021-2030). In line with the EC's Green Deal communication, the draft EU ETS State Aid Guidelines aim to incentivise the modernisation of production processes, while reducing the carbon leakage risk related to indirect ETS costs. The current guidelines will expire on 31 December 2020, but it is still not entirely clear what indirect compensation will look like for the next trading period which starts on 01 January 2021. A public consultation was launched to allow stakeholders to provide input. As the chlor-alkali sector is so highly electro-intensive, we decided to introduce specific comments as Euro Chlor.

First of all, we welcomed the fact that our sector was still considered at high risk, as the proposal so far includes a considerable reduction in the number of sectors eligible for compensation and we are still on the list. We also welcomed the equal treatment of electricity sources, the definition of activity levels and the foreseen mid-term update of the benchmark. On the other hand, we emphasised that some proposals may negate the purpose of the guideline in protecting European companies against carbon leakage. For example, the capping of the compensation to 75% of the benchmark (to be determined at a later stage) is predicted to systematically disadvantage domestic electro-intensive European chlor-alkali manufacture.

We also asked some questions about the CO_2 factor for electricity production, which in the draft is currently proposed to change from a regional to a country approach.

EURO CHLOR MEMBERS AHEAD OF THE CURVE ON MERCURY CONVERSION

In our annual monitoring of environmental commitments regarding mercury, we continue to see progress when it comes to mercury conversion.

Following the phase-out of mercury technology by the end of 2017, Euro Chlor member companies have focussed on the demolition of the cells and the conversion of the liquid mercury to mercury sulfide. This process must complete, and the mercury sulfide be stored in a salt-mine, by the end of 2022. Due to their commitment to safety and sustainability, members are making real progress and we anticipate that all liquid mercury will be converted and safely stored before the deadline. In 2019, 495 tonnes of mercury were converted with approximately 731* tonnes of mercury still being present at those sites which operated chlor-alkali mercury technology.

In the rest of the world, under the United Nation's Minamata Convention on Mercury, the conversion of the mercury process for chlor-alkali must be finalised by the end of 2025. Within the membership of the World Chlorine Council, there remain 12 mercury units operational, with new conversions being announced regularly.

**Mercury for alcoholate production is not included in these figures.*

ECSA: COMMUNICATIONS AND COLLABORATION

Communications: new website highlights benefits of chlorinated solvents

Early in 2020, ECSA launched its new website. This new online portal has been designed to promote the benefits of chlorinated solvents and their products, whilst sharing information on best practices in sustainability, safety and technology and the latest information on regulatory issues. The next step in this website development process is to update all the documents featured there with the latest ECSA information. The site is available at

https://www.chlorinated-solvents.eu.

Collaboration increasing with international associations

US sister organisation Halogenated Solvents Industry Alliance, Inc.(HSIA) invited ECSA to participate in its 11 June 2020 Board of Directors meeting. Here, ECSA Sector Group Manager Angelica Candido and member company (Inovyn) representatives Chris Howick and Neil Rosenburgh (also ECSA Chair) shared key information. Click here for more details.

REGULATORY CHALLENGES

EC Ozone Depleting Substances (ODS) Regulation

ECSA is monitoring several regulatory topics. In March 2020, the European Commission (EC) published the results of its evaluation on the Ozone Depleting Substances (ODS) Regulation finding that it:

- Achieved its objectives: ensuring compliance with the international agreements on the protection of the ozone layer and having a high level of ambition for protecting the ozone layer and fighting climate change;
- Remains highly relevant and has a clear EU added value. Only a common, harmonised EU approach can implement the Montreal Protocol's obligations and respect internal market rules;
- Is in general well-aligned with relevant EU and international legislation;
- Is efficient, but some results may be achievable through simpler, less resource-intensive activities.

Substances supported by ECSA and listed on the ODS Regulation are carbon tetrachloride (CTC) (Annex I, restrictions and reporting) and methyl chloride (MeCl) (Annex II, reporting only, no restrictions).

> Euro Chlor's Product Groups add value by optimally engaging with key stakeholders on behalf of their memberships.

PRODUCT NEWS

ANGELICA CANDIDO
ECSA Manager

German MAK Commission

In Germany, the MAK Commission is the key institution for deriving scientific-based occupational exposure limits (OELs) which are applied at national level. Their assessments are also of high relevance for European authorities and international advisory bodies such as the International Agency for Research on Cancer (IARC).

Early in 2020, the MAK Commission requested and gained access to an OECD 414 developmental toxicity study of MeCl on rabbits, commissioned by industry. This was because the MAK Commission were requested by the Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA, the German Federal Institute for Occupational Safety and Health) to re-evaluate MeCl. Back in early 2019, industry prepared a scientific publication in a peer-reviewed journal on the results of the study, and its relevance in view of older data, with the intention to inform regulators and advisory bodies globally on its positive outcome.

The MAK Commission concluded that there is no reason to classify MeCl for skin absorption, sensitisation, carcinogenicity and mutagenicity, as was partially done in previous assessments. The proposal will now undergo consultation with presentation of any additional scientific information by the end of 2020. The new classification proposal is expected to become official in 2021

UBA PMT approach

Perchloroethylene (PER) is considered to be persistent, mobile and toxic (PMT) under criteria set by Germany's Umweltbundesamt (UBA, the German Federal Environment Agency). The PMT criteria could be used to identify substances of very high concern (SVHC) for inclusion in the candidate list for authorisation under REACH, and the Stockholm Convention on Persistent Organic Pollutants (POPs). An EU Science Committee identified PMT substances as one of 14 emerging issues that could impact human health or the environment in the future. ECSA has argued that a risk-based approach should be taken, particularly as PER is used in closed systems with negligible risk of environmental emissions. ECSA has shared its position with Cefic, national industry associations and EU and national authorities and
is closely following the scientific and regulatory discussions.

Other ongoing topics include the global Montreal Protocol on ODS.

BUILDING UNDERSTANDING WITH CHLORO ALKANES PRODUCT GROUP (CAPG)

The CAPG has worked this year to improve authority and academic understanding on this group of versatile chemicals.

With the conclusion of the REACH Substance Evaluation for MCCP, CAPG is now helping to connect the MCCP REACH consortium with authorities. This will ensure that they are well-briefed on the most up-to-date science for the next phase of the assessment.

The group have also supported several key conferences in 2020. In May, they presented at SETAC (a large academic/regulator/industry environmental chemistry conference). In August they held a webinar with academics to discuss state-of-the art techniques to analyse chloro alkanes. They are also holding an international webinar in September 2020 to brief global audiences on the regulatory status of chloro alkanes around the world.

Finally, CAPG are sponsoring an Intertek project to prepare a PVC cable life-cycle assessment and worker exposure study. This will provide authorities with useful information on MCCP as part of an ongoing assessment under the Restriction of Hazardous Substances in Electronics and Electronic Equipment (RoHS) Directive. Here, an uninformed risk assessment by the German Oeko Institut seems to recommend a restriction for MCCP, which the group hope to help improve.

SODIUM CHLORATE AND POTASSIUM PRODUCT GROUPS

A range of activities were also undertaken by the Potassium and Sodium Chlorate Product Groups to benefit their respective memberships in 2019/ 2020.

NEW SECTOR GROUP ON CHLOROFORMATES

April 2020 saw the introduction of a new Sector Group (SG) focusing on chloroformates. This new cluster will advance authority understanding and staff safety on this class of substances used as intermediates in the manufacture of various fine chemicals (e.g. pharmaceuticals) and as reagents in plastic production.

As a first activity, the group will prepare an advice document on how to safely handle, transport and store drums of the most hazardous chloroformates. Anyone who is interested in supporting the drafting of this document, or in participating in group activities, should contact Richy Mariner.

OTHER EURO CHLOR/HALOGENS INDUSTRY SECTOR NEWS

Euro Chlor operates within the Euro Chlor/Halogens industry sector cluster as part of Cefic. This brings together a cluster of inorganic basic chemicals that are essential building blocks to manufacture a multitude of products. Here are the past year's highlights from the two related sister SGs:

EFCTC (European FluoroCarbons Technical Committee)

EFCTC has continued its intense work started last year to combat a rapid emergence of illegal imports of hydrofluorocarbons (HFCs/refrigerants) into the EU. This has involved the ramp-up of its campaign with a project featuring the following multiple levels:

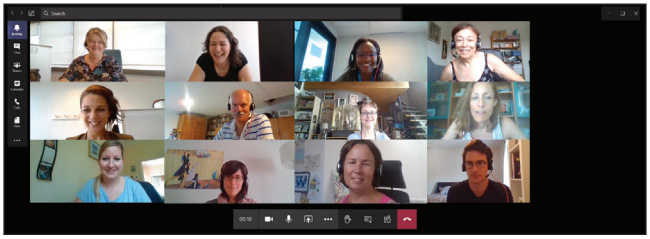
- Extending investigation activities by an external consultant to collect and analyse data and take direct action. These include a whistle-blower line, online marketplace tool and outreach to law enforcement agencies in the Member States.
- Trade data analysis of HFCs by a consultant to identify discrepancies between Eurostat, Comrade and Chinese datasets.
- A Public Relations and Communications programme by a PR consultant in collaboration with Cefic. This includes the publication of articles in international newspapers and press releases, and a new campaign-related microsite (stopillegalcooling.eu) and logo.
- An ongoing Public Affairs programme, including proactive meetings and collaboration with Member States, relevant EU institutions, MEPs and other EU and non-EU bodies.
- A Customs project with practical seminars/webinars to be held for customs officials.
- A Legal working group, providing support to the campaigns working groups above.

At the same time, the EFCTC General Assembly has been working on the review of the F-gas Regulation (2022) with related association European Partnership for Energy & the Environment (EPEE). EFCTC is preparing a mini-website dedicated to the 2020-2022 review and revamping its main website with a new logo, in line with the Illegal Imports of HFCs campaign.

Eurofluor (CTEF, Comité Technique Européen du Fluor)

Eurofluor keeps its strong focus on ensuring the safe production, use, handling, storage and transport of hydrofluoric acid (HF). Work on the internal exchange of best practices for safer industry behaviour also continues, alongside efforts to improve the group's website.

In 2019, the group launched an exercise to compare its safety guidelines with similar associations in the US and UK, to facilitate and harmonise safety information worldwide.



SEAMLESSLY COLLABORATING WITHIN AND OUTSIDE EURO CHLOR

Europe has been struck hard by the COVID-19 crisis. It has influenced how we function as the chlor-alkali industry, as well as our lives at home. We have all had to adapt accordingly. Together with our Cefic colleagues and like many of our members, the Euro Chlor secretariat has been working from home since mid-March to maintain operationality and availability during normal working hours. As of the end of May, the team started to return to the office. Due to modern technologies, this challenging period has had little impact on everyone's productivity and efficiency and the secretariat was flexible and resourceful in adapting our plans for the year. Now we continue to adapt to this 'new kind of normal'.

TECHNOLOGY CONFERENCE POSTPONED

Due to the COVID-19 crisis, the Management Committee decided to postpone our 11th Euro Chlor International Chlorine Technology Conference and Exhibition in Warsaw, Poland by one year to 4-6 May 2021 (instead of 5-7 May 2020). The theme of this event remains "Chlor-Alkali: contributing to a clean planet for all" and participation is open to Euro Chlor members, partners and all other industry stakeholders such as engineering companies, equipment manufacturers and service suppliers. This postponement meant that the launch of our European Mid-Century Strategy (MCS) for a Sustainable Chlor-Alkali Industry was also pushed back to the Euro Chlor Annual General Meeting (AGM) on 10-11 September 2020, which itself evolved from a physical event in Munich, Germany, to a virtual meeting.

> I am proud of Euro Chlor's proactivity, transparency and collaborative spirit. Even under difficult circumstances, we continue expanding our outreach to members, sister organisations and key stakeholders.

COLLABORATION AND OUTREACH

MARLEEN PAUWELS
Managing Director

EURO CHLOR GROUPS HELPING TO BUILD THE MID-CENTURY STRATEGY

As can be seen here, Euro Chlor has a range of Working Groups and Committees who have worked over the past year to provide significant guidance to the development of the MCS, as well as carry out other activities, with some key ones highlighted here:

Our Management Committee stepped up to finalise and endorse the MCS, as well to direct the planning and materials produced.

Our **General Technical Committee (GTC)**, which maintains its focus on worker health and safety and environmental protection, has been developing the Key Performance Indicators (KPIs) needed to measure our new MCS. The MCS will also form the basis of our third 10-year Sustainability Programme due to begin in 2021. In parallel, the safety and equipment sub-group of the GTC (called the GEST) has updated many recommendation documents in the past 12 months based on the lessons learned from safety incident reports and worked to develop the new interactive safety game. The equipment working group, meanwhile, did a lot of work on the re-approval of the global valves used in liquid and gaseous chlorine.

Our **Regulatory Affairs Committee** covered the Green Deal, Euro Chlor's MCS and several other key topics, including mercury, energy and the Industrial Emissions Directive (IED) across three meetings in 2019/2020.

The group also supported the Call for Evidence discussions on PFAS (Per- and polyfluoroalkyl substances) and the German REACH restriction proposal on PFHxA (Perfluorohexanoic acid). This is due to the essential presence of fluoropolymers in membrane materials, gaskets and other equipment. Further work is expected here in the coming year to determine if there is any release of such fluoropolymers into the environment.

Our **Communications Committee**, meanwhile, endorsed the MCS communications plan and tools, our **Energy Task Force** gave the necessary input to the draft ETS State Aid Guidelines and our **Statistics Committee** produced our monthly overview of chlorine and caustic soda production.

OUR DOWNSTREAM STAKEHOLDERS

This past year, we also kept developing our connections with our downstream stakeholders, most notably VinylPlus®

and the European Council of Vinyl Manufacturers (ECVM) and the European Diisocyanite & Polyol Producers Association (ISOPA).

WORLD CHLORINE COUNCIL SECRETARIAT UPDATE

Euro Chlor took over the Secretariat of the World Chlorine Council (WCC) as of January 2019 and is leading the operations of this global network that represents global chlorine and chlorinated products industries until the end of 2020. Click here for more details.

In early October 2019, the Japan Soda Industry Association (JSIA) successfully hosted 28 international delegates for the WCC Annual Meeting. Co-organised by Euro Chlor, it started with reports on activities and issues from the Global Advocacy & Science Team (GAST), Global Safety Team (GST) and Global Communications Team (GCT) were given from the Euro Chlor staff that lead these groups. The day closed with a Management Committee meeting to discuss the budget, goals and events to be presented to the WCC Governing Council later in the week.

The second day featured an informative plant tour to the AGC Inc. Kashima plant near Tokyo where dedicated employees explained the chlor-alkali process and delegates visited the different stages of their plant. On the final day, the General Assembly meeting covered detailed reports from each WCC region. The whole meeting concluded with the WCC Governing Council, chaired by Andrew Jones from Dow, featuring the Management Committee outcomes and overview from the teams. Participants also included company representatives from Covestro, Dow, Olin and Tosoh Corporation who agreed upon the WCC budget, next steps and events for 2020.

This was followed by a virtual spring update meeting on 30 March 2020. COVID-19, regulatory issues and key events were high on the agenda here. The 2020 WCC Annual Meeting will be held, virtually, in October 2020, rather than in Poland as originally planned due to COVID-19.

As part of its commitments here, Euro Chlor updated the WCC Sustainability Report, basing it on the United Nation's Sustainable Development Goals (SDGs). This global brochure describes how we, and our worldwide partners, contribute to these important goals.

> As part of our Mid-Century Strategy, we will focus on communicating how chlor-alkali can help Europe achieve its green ambitions, whilst showing how attractive our industry is to potential new colleagues.

COMMUNICATIONS

CATHERINE BIRKNER
Communications Manager

EURO CHLOR LAUNCHES A STRATEGY FOR 2050

In September 2020, Euro Chlor launches its Mid-Century Strategy (MCS). This new initiative will plot a course for European chlor-alkali in 2050. Based on the Cefic Mid-Century Vision (MCV) and prepared by Roland Berger, this development was formally initiated as part of the speech by Chairman Jürgen Baune in 2018. Building on consultation from members and industry experts, four priority areas were identified for future work: Euro Chlor as a Safety Leader, a Competitive Supplier, a Circularity Champion and a Climate Neutral Player.

These will be expanded on via the various Euro Chlor Working Groups and it is hoped that all members will support and build on this exciting new strategy.

For the launch of our MCS, a communications plan and many materials (brochure, presentations and video) are available.

FOLLOW US ON SOCIAL MEDIA

Euro Chlor social media activities continue to encourage people to visit our new website. In addition, a private group has been set up on LinkedIn to support Euro Chlor Partners and provide them with the most up-to-date news and content.

With Twitter providing news content and commentary, LinkedIn being more business oriented and Facebook being a platform for highlighting the benefits of chlor-alkali, our three social media platforms continue to grow and we urge people to follow them to ensure they are also kept informed.

Follow us on social media @eurochlor

We actively update our social media and encourage people to follow us on Twitter, Facebook and LinkedIn.

NEW MCS WEBPAGE NOW LIVE WWW.EUROCHLOR.ORG/MCS

#EUROCHLORMCS

A new webpage has also been released to accompany the Euro Chlor MCS. Available at www.eurochlor.org/mcs, this new page serves as an information hub and update channel for the new initiative. Via this digital portal, people can also download the above-mentioned communications materials.

Additional information will appear on Euro Chlor Social Media channels and these can be followed using #eurochlorMCS. Updates will also appear annually in this Industry Review to chart progress.

EURO CHLOR WEBSITE UPDATES

The Euro Chlor website has been updated over the past year with Euro Chlor and member news and a new section on the United Nation's Sustainable Development Goals (SDGs), as well as new chlorine, caustic soda and caustic potash application 'trees'.

DONATIONS FROM EURO CHLOR MEMBERS HELP IN THE FIGHT AGAINST COVID-19

During the recent COVID-19 outbreak, supplies of medical equipment and crucial disinfectants began to drop across Europe. In order to meet this challenge, chemical industry, including Euro Chlor members brought new production streams online and donated disinfectants, protective equipment and money to their local communities world-wide. We proudly refer to a Cefic interactive map outlining the important contributions our industry made in the fight against COVID-19.

Members were also involved in Cefic work to update the European Commission (EC) on the availability of sodium hypochlorite (bleach). This work informed the EC when logistical and regulatory issues were slowing the supply of this essential disinfectant. In addition, Cefic launched a COVID-19 helpdesk to give key support to members.

Over the past months, the following news articles about our Euro Chlor members fighting COVID-19 have been published:

MEMBERS

MEMBERS AND PARTNERS

Altair Chimica SpA
http://www.altairchimica.com

Anwil SA (ORLEN Group)
http://www.anwil.pl

Arkema France
https://www.arkema.com/en

BASF SE
http://www.BASF.com

Biomca Quimica SL
http://www.biomcaquimica.com

Bondalti Chemicals SA
http://www.bondalti.com

Borregaard AS
http://www.borregaard.com

BorsodChem Zrt.
http://www.borsodchem-group.com

Brenntag UK Ltd
http://www.brenntag.co.uk

CABB AG
http://www.cabb-chemicals.com

CABB GmbH
http://www.cabb-chemicals.com

Covestro AG
http://www.covestro.com

Donau Chemie AG
http://www.donau-chemie.com

Dow Deutschland Anlagengesellschaft mbH
http://www.dow.de

Electroquimica de Hernani
http://www.ehersa.com/es

Electroquímica Onubense, S.L.
http://www.electroquimicaonubense.es

Ercros SA
http://www.ercros.es

Evonik Operations GmbH
http://www.evonik.com

Fater S.p.A.
http://www.fater.it

Industrial Chemicals Limited (ICL)
http://www.icgl.co.uk

Ing. Luigi Conti Vecchi S.p.A.
https://www.eniday.com/it/human_it/valorizzazione-saline-conti-vecchi

INOVYN ChlorVinyls Limited
http://www.inovyn.com

Kapachim SA
http://www.kapachim.com

Kemira Oyj
http://www.kemira.com

KEM ONE
http://www.kemone.com

Micro Bio (Irl.) Ltd.
http://www.microbio.ie

MSSA SAS
http://www.metauxspeciaux.fr

Nouryon
http://www.nouryon.com

PCC Rokita SA
https://www.pcc.rokita.pl

Produits Chimiques de Loos (Tessenderlo Group)
http://www.tessenderlo.com

Química del Cinca SLU
http://www.qcinca.es

SC Chimcomplex SA Borzesti
http://www.chimcomplex.ro

Società Chimica Bussi S.p.A.
http://www.chimicabussi.it

Spolek pro chemickou a hutni vyrobu, a.s. (Spolchemie)
http://www.spolchemie.cz

Vencorex
http://www.vencorex.com

VESTOLIT GmbH (Orbia)
http://www.vestolit.de

Vinnolit GmbH & Co. KG
http://www.vinnolit.com

Vynova Group
https://www.vynova-group.com

PARTNERS

Adama Makhtshim Ltd
http://www.adama.com

AGC Chemicals Europe Ltd.
http://www.agcce.com

Ak-Kim Kimya
http://www.akkim.com/tr/en

Alchemist International Ltd
n/a

AMEC FOSTER WHEELER ITALIANA SRL
https://www.amecfw.com

ANE (Asociación Nacional de Electroquímica)
http://www.cloro.info

Angelini A.C.R.A.F. S.p.A.
http://www.angelini.it

Applitek NV/SA
http://www.applitek.com

AQUAGROUP AG
http://www.aquagroup.com

Arch Chemicals S.A.S.
http://www.lonza.com

Armstrong Chemtec Group
https://www.armstrong-chemtec.com

Asahi Kasei Europe GmbH
https://www.asahi-kasei.co.jp/asahi/en

Atana Limited
http://www.atana.co.uk

Axiall, LLC
http://www.axiall.com

Banner Chemicals Limited
http://www.bannerchemicals.com

BARCHEMICALS SRL
http://www.barchemicals.it

BATREC INDUSTRIE AG
http://www.batrec.ch/en

BELL-O-SEAL VALVES P. LIMITED
http://bellowseal.com

Blackhall Engineering Limited
http://www.shawvalves.co.uk

Bluestar (Beijing) Chemical Machinery Co., Ltd.
http://www.chemchina.com.cn

BOCHEMIE a.s.
https://www.bochemie.cz/en

BWT AG
http://www.bwt-group.com

Caffaro Brescia S.r.l.
http://www.caffarobrescia.com

CARBUROS METALICOS SA
http://www.carburos.com

CBee Europe Ltd
https://www.clorox.com

Chemieanlagenbau Chemnitz GmbH
http://www.cac-chem.de

Chemoform AG
http://www.chemoform.com

Chloran Chemical Production Co. (CCPC)
http://www.ccpc.ir/en/home

CIA - Chemicals Industries Association Ltd
http://www.cia.org.uk

Coogee Chlor Alkali Pty Ltd
http://www.coogee.com.au

De Nora Deutschland GmbH
http://www.denora.com

Descote
http://www.descote.com

DSD Chemtech Projects & Services GmbH
http://www.dsd-chemtech.com

DUPONT ASTURIAS, S.L.
http://www.dupont.com

Econ Industries Services GmbH
http://www.econindustries.com

ERAMET SANDOUVILLE SAS
http://www.eramet.fr

Essenscia ASBL
https://www.essenscia.be

Eu Salt aisbl (European Salt Producers' Association)
https://eusalt.com

Eynard Robin
http://www.groupe.eynardrobin.com

Fariman Petrochemical Industries
https://farimanpetrochemical.en.ec21.com

FEDERCHIMICA - Federazione Nazionale dell' Industria Chimica
http://www.federchimica.it

FIKE Europe bvba
http://www.fike.com

Garlock Sealing Technologies
https://www.garlock.com

Gazechim
http://www.gazechim.com

PARTNERS

GHC Gerling, Holz & Co Handels GmbH
http://www.ghc.com

Haixing Eno Chemical Co., Ltd.
http://www.enochem.com.cn

HELM AG
http://www.helmag.com

Hunt & Mitton Valve Company
http://www.huntandmitton.net

Huntsman Belgium BVBA
http://www.huntsman.com

IKEM - Innovation and Chemical Industries in Sweden
http://www.ikem.se

INQUIDE S.A.
https://www.fluidra.com

IXOM (formerly Orica Chemicals)
http://www.ixom.com

Jiangsu Ancan Technology Co., Ltd.
http://www.ancan-cn.com

Jordan Bromine Company
http://www.jordanbromine.com

K+S Entsorgung GmbH
http://www.ks-entsorgung.com

Kronos Worldwide Inc
http://www.kronostio2.com

KUROTEC-KTS KUNSTSTOFFTECHNIK STADE GMBH
http://www.kurotec-kts.de

Leuna Tenside GmbH
http://www.leuna-tenside.de

LOMBARDA H Srl
http://www.lombardah.com

Lonza AG
http://www.lonza.com

Lubrizol Deutschland GmbH
http://www.lubrizol.com

Mersen Pgy SAS
https://www.mersen.com/markets/corrosive-chemicals/chlor-alkali

META Régénération
https://meta-regeneration.fr

Nankai Chemical Industry Co., Ltd.
http://www.nankai-chem.co.jp

NEELTRAN, INC.
http://www.neeltran.com

Nippon Soda
http://www.nippon-soda.co.jp

Nirou Chlor co.
http://www.nirouchlor.com

Nuberg Engineering Limited
http://www.nubergepc.com

Olin (Blue Cube Operations, LLC)
http://www.olin.com

Permascand AB
http://www.permascand.com

Pfeiffer Chemie-Armaturenbau GmbH
http://www.pfeiffer-armaturen.com

Phoenix Armaturen-Werke Bregel GmbH
https://www.cw-valvegroup.com

Powell Fabrication & Manufacturing LLC.
http://www.powellfab.com

PRINCE RUBBER & PLASTICS CO., INC.
http://www.princerp.com

Recherche 2000 Inc.
http://www.r2000.com

Richter-Chemie-Technik GmbH
http://www.richter-ct.com

SALCO PRODUCTS INC.
https://www.salcoproducts.com

SALINEN AUSTRIA AG
https://www.salinen.com/en

Sasol Chemicals a division of Sasol South Africa (Pty) Ltd
http://www.sasol.com

SAVINO BARBERA SRL
http://www.savinobarbera.com

SCHP - Association of Chemical Industry of the Czech Republic
http://www.schp.cz

Scienceindustries
http://www.scienceindustries.ch

PARTNERS

Senior Aerospace Ermeto
http://www.senior-aerospace-ermeto.com
SEQENS Acid & Derivatives
https://www.seqens.com/en
SGL Carbon Gmbh
http://www.sglprocesstechnology.com
SIEM Supranite
http://www.siem.fr
Sinopec Jianghan Salt & Chemical Complex
http://www.sinopecgroup.com/group/en
Sojitz Europe plc
http://www.sojitz.com
Spolana s.r.o
http://www.spolana.cz
Steuler-KCH GmbH
http://www.steuler-kch.de
Syngenta Crop Protection Monthey SA
https://www.syngenta.com
TechnipFMC France
http://www.technipfmc.com
Teijin Aramid BV
http://www.teijinaramid.com
ThyssenKrupp Uhde Chlorine Engineers GmbH
http://www.thyssenkrupp-uhde-chlorine-engineers.com
Tosoh Corporation
http://www.tosoh.com
Tronox Pigments (Holland) B.V.
http://www.tronox.com
UNILEVER-KNORR S.A.
http://www.unilever.com
VAN DEN HEUVEL WATERTECHNOLOGIE BV
http://www.vdhwater.com
VCI - Verband der Chemischen Industrie e. V.
http://www.vci.de
VELTEK ASSOCIATES INC.
http://www.sterile.com
VNCI - Vereniging van de Nederlandse Chemische Industrie
https://www.vnci.nl
Xomox International GmbH & Co. OHG - Crane ChemPharma & Energy
http://www.cranecpe.com

17.

Read more details at:

https://www.eurochlor.org/about-us/members

https://www.eurochlor.org/about-us/partners

Euro Chlor supports a safe, competitive and green chlor-alkali industry for Europe.

Chlor-alkali is an essential building block for the manufacture of numerous products that we rely on every day. Across Europe, millions of jobs are dependent on the availability of competitively priced chlor-alkali supplies.

Chlor-alkali chemistry is also vital for the development of the innovative materials we will need in the future.

Euro Chlor's 38 producing members operate 60 manufacturing locations in 19 European countries, representing 97% of all European production capacity.

Euro Chlor represents the interests of chlor-alkali producers in Europe; encourages best practices in safety, health and environmental protection and promotes the economic and social benefits of chlor-alkali and the many industries that rely on them.

Based in Brussels, Belgium, Euro Chlor is a sector group of Cefic (European Chemical Industry Council).

Euro Chlor is a member of the World Chlorine Council, a global network of regional organisations that represents producers accounting for more than 85% of worldwide chlor-alkali production capacity.

https://linkedin.com/company/eurochlor

https://twitter.com/eurochlor

https://facebook.com/eurochlor

Euro Chlor

eurochlor@cefic.be

https://www.eurochlor.org

euro chlor 17.

A sector group of Cefic

EU Transparency Register n° 64879142323-90