



EUROMETAUX CHEMICALS MANAGEMENT NEWS



Please join us on:

- 31 August: Chemicals Management Steering Committee meeting
- Save the Date: Chemicals Management Autumn Week: 27/09 01/10

And our Summer special on the last page

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Dear All,

Fancy a game of GreenDealpoly? Please change role every time you pass by "start" (i.e., industry, NGO, authority)!



Violaine Verougstraete, Chemicals Management Director

COMMISSION

CARACAL-40: online meeting on 29-30 June

The REACH session started with an update on the REACH Revision, recalling that this revision will be done "in the most targeted way possible, limited to achieving the objectives of this Strategy". Commission presented their vision for "One Substance, One Assessment" (OSOA) and an update on related activities. A strategy and actions related to the initiation of assessments, allocation of tasks and responsibilities, data, methodologies, and transparency have been announced. An expert Working Group composed of Member States, COM and EU Agencies will be established to support its implementation and meet for the first time in September.

An important REACH discussion related to the Restrictions Roadmap on which comments can be sent until 10 September. The Chemicals Strategy for Sustainability (CSS) foresees the development of a roadmap of substances to be prioritised for restrictions (the so-called "Most Harmful Chemicals"), until the REACH revision enters into force. These restrictions would cover all uses and be done through grouping.

Updates on the definition of nanomaterials and on ECHA's work on the assessment of "More than One Constituent Substances" (MOCs) were provided and Germany presented a short summary of their findings on Unknown or Variable Composition, Complex Reaction Products and Biological Materials (UVCB) dossiers, highlighting the poor knowledge on the composition of UVCB substances.

In the Classification Labelling and Packaging Regulation (CLP) Session, Commission provided an update on the Global Harmonised System of classification and labelling of chemicals (GHS) activities and related EU contributions, and also recalled the main topics to be covered by the CLP revision in the context of the CSS. Two substances included in the 18th ATP were further discussed, with a presentation by industry experts and the latest developments on bioelution were communicated (see later). Draft notes of the CARACAL session were circulated on 15 July. The next CARACAL meeting will take place mid-November (more information: Noam EL Mrabet).

EU AGENCIES

EUROPEAN CHEMICALS AGENCY (ECHA)

ECHA COMMITTEES

RAC: Working Group CLH meeting discussing lithium

RAC had a two-day Working Group meeting early July to discuss among others the two CLH proposals for three Li compounds and silver (see below). RAC Working Group meetings are organised in between RAC plenary meetings to discuss the proposals from the Rapporteurs in depth and prepare recommendations for the next plenary meeting, where conclusions will be drawn.

On lithium, the 5-hour discussion addressed read-across, and the classifications proposed by France for developmental toxicity and lactation. The conclusion reached in June (in plenary) on fertility was not reopened. The debate on read-across focused on the inclusion of the lithium hydroxide (LiOH) in the classification proposal. Industry had prepared a detailed justification for not including the corrosive compound, which was submitted to RAC ahead of the discussion and the consequences for testing the LiOH and the implications for hazard identification were re-explained during the meeting. As the participants' views were divided, the RAC Chair volunteered a couple of RAC members to work further on this issue and to propose a solution for the September meeting. On developmental toxicity, there was a relatively long discussion on the available human evidence, the quality and the consistency of the data. In their presentation of the results and the conclusions, Industry explained very clearly the weaknesses of some studies and demonstrated the inconsistencies, but this did not prevent the Working Group from recommending a classification as Category 1A for developmental toxicity.

On lactation, the discussion was centred around the question if the existing studies support the conclusion that lithium transmitted via the mothers' milk would lead to adverse effects in babies. Some animal studies have investigated this but present the drawback that the pups were exposed during the whole lactation period, where they partly also eat food or drink water in addition to mothers' milk. This makes it difficult to decide on the attribution of the effects to lactation. The available studies do not really support a higher sensitivity of the offspring either. This point will be further discussed in September.

As France, the Dossier Submitter, provided an additional publication on the issue just before the meeting, ECHA organised a targeted consultation until 22 July. The industry experts submitted comments supported by the Li CLH Taskforce. So overall, the recommendation that will be discussed in September will include a Cat. 1A for developmental toxicity, possibly lactation and clarifying the read-across (more information: Sylvia Jacobi, Werner Köhl and Violaine Verougstraete).

RAC Working Group CLH: silver discussion

On silver, the Rapporteurs made detailed presentations, both on the human health and the environmental aspects. They started by recalling that there is no current entry in Annex VI of the CLP Regulation and that Sweden has proposed to classify it as Skin Sens. 1 H317, Muta. 2 H341 and Repr. 1B H360FD. The presentations thoroughly covered the available evidence for silver, albeit raising some important elements that will require close follow-up, like e.g., the statement by the Dossier Submitter that data on nanosilver and other silver substances releasing silver ions is considered relevant for massive or powdered forms of silver, how RAC will make use of the toxicokinetic data, some preliminary comments on the dose/read-across in the ongoing Extended One Generation Reprotoxic Study (EOGRTS) and the willingness of RAC to align the silver environmental discussion with the lead metal one (e.g., decision tree, release of particles). In terms of timing, in view of the ongoing EORGTS and the possible precedent-setting by lead metal, the RAC Chair has proposed to take silver off the September plenary agenda and to rediscuss it again during the October CLH Working Group Meeting, in November/December (RAC-59) and March (RAC-60). Several actions were identified for the Rapporteurs, with a request that industry provide some further information. Two contributions by industry are scheduled for the summer (more information: France Capon, Anissa Alami, Jelle Mertens, Katrien Arijs, Hugo Waeterschoot and Violaine Verougstraete).

RAC: preparing for RAC-58 discussions on the environmental classification of lead in massive form

During RAC's September meeting, the focus will be exclusively on lead given the silver metal discussions on the environmental classification endpoint, will be postponed to the RAC-59 & RAC-60 meetings (see above). Furthermore, at this stage it is unclear how the ECHA secretariat and RAC Rapporteurs would like to proceed with the lead case (*will they only support a single entry classifying for the massive (as the powder) or leave the two options open for a decision to be taken at policy level)* given there was no Working Group discussion over the summer on lead.

RAC's view will be defined based on the legal interpretation on how "releases from articles" should be considered as «normal handling and use of the massive metal as manufactured». ILA and Eurometaux identified this as a very dangerous precedent given articles are out of scope of the CLP, including their releases, or end of life. However, ECHA stated that the releases, when fitting the definition of a by-product (e.g., when collected and recycled), should be considered as a form of massive lead. This would mean that recycled materials would affect the classification whilst waste would not, a view that would not stimulate recovery and recycling. Moreover, such an interpretation comes through as more of a policy issue and has far reaching consequences for many metals with environmental properties that are used in consumer articles. Eurometaux therefore supports ILA in this exercise of preparing a defence, suggesting this should be discussed at Commission level, given it is not a scientific discussion to be dealt with at RAC; hence at least keeping the option open for a distinctive classification of the massive and the powder form (more information: Steve Binks and Hugo Waeterschoot).

EUROMETAUX CHEMICALS MANAGEMENT

CHEMICALS STRATEGY FOR SUSTAINABILITY

CSS Project Group meeting: 5 July

The group had its fourth meeting in early July, to tidy up "loose ends" before the summer break. The main item for discussion was again the High-Level Roundtable (HLRT) – namely the draft Rules of Procedure and list of discussion topics released by the Commission in mid-June and discussed at a Sherpa meeting on 22 June. All parties represented in the HLRT had the opportunity to provide written comments to the Commission on both items by 9 July. Following an alignment discussion with the other industry Sherpas on 7 July, Eurometaux submitted comments on the Rules of Procedure calling for: a structure that allows sufficient time for meaningful discussion between the HLRT members; clarity on how reports from the

HLRT will be produced and used; a clear "code of conduct" to be applied. On the list of proposed discussion topics, Eurometaux reiterated key points from previous submissions which could be better reflected in the topic list. These fall broadly into three categories: alignment with other key EU and global objectives; improving the efficiency of the current regulatory system (before introducing new tools); and the need for transparency and predictability for industry – particularly with regard to investment decisions. The discussion topic for the next meeting of HLRT is "strengthening enforcement" and the Commission is expected to release a background document before the end of July, to start the process of preparing for the November meeting.

The Project Group was also debriefed on a discussion held with Cefic on Risk Management in the context of the CSS, and on relevant items from the last CARACAL session (from detailed notes which have now been released – see earlier section)

This meeting was the last to be chaired by An Hagenaars from Umicore, as An is moving to a new role within Umicore. The secretariat would like to than An for her contribution so far which has been – although short – very valuable. The role of chair will pass to Sarah Hottenroth (also from Umicore) who has kindly agreed to step in (more information: Simon Cook).

REACH REGISTRATIONS

Amendment of REACH Annex VI to X: Eurometaux submitted comments to the Public Consultation

Over the past months the European Commission, together with a group of stakeholders including industry experts, worked to improve the wording related to REACH information requirements (i.e., REACH Annex VI to X). A draft proposal to amend the annexes was released and opened for consultation.

Eurometaux responded to the consultation providing comments on three main areas:

- Protection of confidential business information related to the characterisation of nanoforms
- Contradictory criteria used to define "serious concerns" about potential adverse effects on sexual function, fertility or development.
- Unavailability of internationally agreed *in vitro* methods to identify substances giving rise to developmental or reproductive toxicity
- Need for clear guidance on when further long-term toxicity testing may be required.

The revision of the annexes is expected to be completed in the second half of 2021 based on the comments received from the Public Consultation (more information: Arne Burzlaff (EBRC) & Lorenzo Zullo).

Industry initiative to improve communication of safety information along the supply chain: mini project to be run in O4 2021

As part of the REACH Review process, the European Commission recognised the importance of efficiently transferring safety information across the supply chain and the crucial role played by the safety data sheets. However, despite initial discussions with ECHA on minimum requirements and the establishment of common XML format for electronic communication of safety information between companies, the activity was deprioritised and not brought forward. Considering the interest across multiple organisations, a cross industry group including among others Cefic, Concawe, Eurometaux and DUCC, decided to work on such an initiative starting with a mini-project to be run in Q4 2021 whose aim will be to define, as initial step, possible business cases. According to the last call organised on the 27 July, the project will kick off in September based on a scoping document to be drafted in August (more information: Lorenzo Zullo).

RISK MANAGEMENT

Restriction Roadmap: Eurometaux prepares an integrated view on the future of risk management

End of June, the Commission released its draft Restriction Roadmap aiming at collecting comments from stakeholders and Member States by 10 September. The roadmap is a proposed interim measure to bridge the period between now and the implementation of the REACH revisions somewhere in 2025-27. It aims at facilitating and speeding up the risk management of chemicals through restrictions. It proposes measures to increase the transparency, predictability and priority setting while increasing the speed, by applying grouping of substances and including "substances of similar type". Given the importance of the restriction scheme for the risk management of metals, Eurometaux has already prepared a first analysis identifying a series of items that require its members' consideration. These points will be further elaborated early August and a draft submission will be circulated to the Risk Management Taskforce for input to define a founded position on the Roadmap by the submission deadline. The response will thereby anticipate the expected

future of restrictions under the new REACH system after 2025, which is supposed to absorb the present authorisation scheme. Absolutely key is that restrictions should remain focussed on "unacceptable risks for health or the environment at EU-wide level". The main concern is that due to the suggested "grouping of substances" the focus on use specific risk management measures would decrease or not even be feasible anymore, hence the need to select the best risk management measure to deal with it. Eurometaux will therefore plea for a transparent and predictable risk-based system that uses a rolling list of substances to allow for transparency, consistency and prioritisation, whose primary focus should remain on "use-based risk management" rather than "grouping of substances based on hazard mainly" with different use patterns. The Roadmap's commenting period is the ideal moment to communicate this message to ensure that in the longer-term the future restriction tools can remain effective and relevant. In addition, Eurometaux will raise attention to the impact on climate mitigation and circularity of material streams when considering the suitability of risk management measures by restrictions, given they are relevant objectives under the Green Deal for chemicals management (more information: France Capon, Klaus Kamps and Hugo Waeterschoot).

NANOMATERIALS

EU definition review: Eurometaux responded to the survey raising concerns about the limited scope of the review

The recommendation on the nanomaterial's definition in the EU has now existed for 10 years, hence the Commission organised "a survey" to collect comments. Whilst being a recommendation, the definition is used as a legal reference in REACH to define additional and specific nanomaterials' information requirements. However, instead of addressing and assessing the relevancy of the impact and consequences on the difference between the EU definition and the ISO-OECD definition used worldwide, the survey focussed exclusively on some suggested clarifications of the present nanomaterials explanatory guidance. Moreover, the survey did not focus any attention on the consequences of Member States applying stricter definitions than the EU one (e.g., France) given it is published as a recommendation. Eurometaux completed the nano-definition survey based upon the outcome and suggestions made during a webinar session held in June and subsequently organised a commentary round on the proposed response to ensure the comments received broad support. In addition, we used the opportunity to plead for a better alignment with the global definition of nanomaterials and focus on pre-manufactured materials. Commission indicated that they would invite those who submitted comments to a workshop to extend the discussions on the definition. The timing of this further activity is however unclear at this stage (more information: Christine Spirlet, Koen Oorts and Hugo Waeterschoot).

INDUSTRIAL EMISSIONS

Industrial Emissions: IED and E-PRTR workshops

The final stakeholder consultation workshops on the revision of the Industrial Emissions and European Pollutants Release and Transfer Register (E-PRTR) Directives were held on 7-8 July. Briefly, the objectives for the revision of the Industrial Emissions Directive (IED) (in line with the European Green Deal) are to revise EU measures on pollutant emission from (agro-)industrial installations to contribute to the EU's Zero Pollution Ambition and make it fully consistent with the EU's decarbonisation, energy and circular economy policies. A selection of 58 policy measures that would contribute to addressing the problems identified and achieving the objectives that have been set has been considered, covering several areas like ensuring the (Best Available Technique-Associated Emission Levels) BAT-AELs are achieved, clarifying the IED permitting process, improving the determination of BAT-Associated Environmental Performance Level (BAT-AEPLs) and their implementation, enhancing resource efficiency and circular economy, decarbonisation and expanding the scope of the IED. A set of 5 policy options (PO) has been set, combining some of the above-mentioned 58 policy measures. The first 4 have been set with an increasing level of ambition and would allow to consider new approaches for addressing the overuse of hazardous chemicals, resource efficiency, circular economy and decarbonisation of industry, whilst the fifth, on scope extension, was defined as complementary to the other ones. All these options were presented during the workshop. To note: Commission indicated that written comments with practical examples on the different policy measures can be submitted. Please let us know if you have input by 20 August.

On Thursday 8th July the E-PRTR stakeholder workshop was held by Risk and Policy Analysts (RPA) Europe and the Commission. The agenda, the slides and the recording are already available here: https://www.rpa-europe.eu/e-prtr-final-stakeholder-workshop.

The consultants, after describing the problem areas and policy options identified in the Inception Impact Assessment as well as in the approach, described a number of mechanisms available to address the problems (amend legislative text; use Commission Implementing Decisions, e.g., for amending pollutant lists; enhance the E-PRTR guidance; amend reporting tools and mechanisms; increased publicity of E-PRTR and data accessibility). Topics like sectorial scope, pollutant and thresholds for reporting releases, information to track progress towards the circular economy and the decarbonisation of industry, reporting modalities and data flow, access to E-PRTR information and releases from diffuse sources and products were also addressed. Several policy options were presented. Two focus groups on the E-PRTR review will be set up to discuss more in detail (new) industrial activities, pollutants and threshold limits, data transmission methods, database access, contextual information and emissions from widespread sources and products. Lorenzo Ceccherini (Seeds Consulting) attended both workshops on behalf of Eurometaux and a summary, highlighting the key messages, was circulated to the Taskforce on 13 July (more information: Lorenzo Ceccherini and Violaine Verougstraete).

WATER

Water Taskforce meeting: Public Consultation launched

While the 'fitness check' found EU water legislation to be broadly fit for purpose, it also concluded that improvement is needed on aspects such as investment, implementing rules, integrating water objectives into other policies, chemical pollution, administrative simplification and digitalisation. The Commission has now launched its open Public Consultation on the upcoming review of pollutants in surface and groundwaters and its corresponding regulation setting standards (https://ec.europa.eu/info/law/betterregulation/have-your-say/initiatives/12662-Integrated-water-management-revised-lists-of-surface-andgroundwater-pollutants_en). The purpose of this consultation is to consider the need for an update, to evaluate policy options and to assess the potential economic, social and environmental impact of those policy options. The options under consideration in the Impact Assessment aim to: a) protect the aquatic environment and human health from chemical pollution through achieving good surface water chemical status by controlling emissions of Priority Substances and ceasing/phasing out emissions, discharges and losses of Priority Hazardous Substances; b) ensure a high and equal level of protection of groundwater resources including their connected or dependent ecosystems and their uses; c) to continuously improve knowledge and decision-making on sufficient, correct, robust and transparent monitoring and reporting information. The initiative is part of the implementation of the Zero Pollution Action Plan aimed at reducing air, water and soil pollution to levels no longer harmful to human health and the environment by 2050. Deadline for submission is 1 November 2021. The questionnaire will be circulated to the Water Taskforce soon. Please also save the date for the next Water Taskforce meeting that will be held on 18 November (more information: Lara Van de Merckt).

TOOLS

Bioelution: keeping spirits up

During the CARACAL-40, DG ENV presented the latest developments. The CASG Bio had its second meeting on 27 May (see Chemicals News N°113). Commission and ECHA confirmed their willingness to continue the discussion, considering the efforts done by all actors (including Member States). At OECD, where the Test Guideline is discussed, some Member States asked to perform additional tests on alloys, including *in vivo* ones but what is requested needs to be clarified.

Commission highlighted that overall, the CASG Bio meeting was "positive and held in good spirits".

As there are some uncertainties remaining on how to apply bioaccessibility in the context of CLP article 12(b), the idea that popped up is to add an uncertainty factor to cover these uncertainties. Commission and ECHA will develop a comparison table to compare the current CLP approach and the approach proposed by industry to see where there are uncertainties and how these are handled (e.g., do we consider uncertainties in sample size, particle size, lifecycle changes of alloys in the current system?).

The next CASG Bio meeting will be in October 2021 (to be able to consider the discussions taking place at OECD and have the time to develop the comparison table). The discussion will focus in particular on the table and safety factors. Also, Austria have developed a very interesting document that will be discussed further (enforcement and traceability of bioelution data).

Commission concluded by saying that they will draft minutes of the CASG Bio meeting over the summer. Industry will prepare some input to follow up on other identified actions (e.g., how to group alloys, how to

select a representative sample) that will be circulated for comments to the Human Health Taskforce (more information: Adriana Oller and Violaine Verougstraete).

Multi-metallic database: new functionality to flag substances as "under review"

The development of the multi-metallic database is proceeding and the official launch is expected in September. Data owners are currently checking the data associated to their respective substances. Additionally, considering that data could also be subject to review and evolve over time, a new functionality to flag the substances as "under review" has been introduced. Data owners can now introduce the following flags: i) Industry review ongoing, ii) Industry update ongoing, iii) Substance Evaluation ongoing, iv) Dossier Evaluation ongoing, v) CLP Harmonised classifications ongoing.

Flags can be associated to specific parts of the data, together with a brief explanation. This new functionality is considered important to make users aware of possible upcoming changes in the data (more information: Federica Iaccino, Lorenzo Zullo).

METALS & INORGANICS SECTORIAL APPROACH (MISA)

Preparing for the future of the Green Deal: a collective multi-year exposure data gathering and research programme on metals in support of the Zero Pollution Ambition

The REACH/CLP revisions and the Zero Pollution Action Plan (ZPAP) raise new, longer-term, regulatory challenges that will affect many if not all companies and consortia/commodities/associations. A clear example is the combined environmental toxicity assessment (often referred to as 'Mixture Assessment Factor (MAF)') programme, which is a huge regulatory/compliance challenge for most metals. In addition, the "MISA exposure workshops" identified specific (common) data needs to improve the regional environmental exposure assessments in the REACH registration files. Improving the regional exposure knowledge is key to define whether there are actual environmental risks associated with exposure to metals, and what the metals sector's contributing part to the overall risk is before risk management measures are defined.

With the help of its members and the MISA community, the Eurometaux secretariat defined a first overview of such "opportunities for long-term multi-metallic data gathering programmes on regional environmental exposure assessment" as well as possible objectives and milestones. A short survey showed that a first outline of possible multi-metallic projects to address the issues collectively as well as their grouping in two packs (i.e. MAF and ZPAP), were supported by the members/MISA consortia. The feedback that was provided on the relevance and priorities is now being used to design a concrete and coherent set of collective data-gathering programmes that will help the sector to be prepared in due time and in a cost- and resources- efficient way for the environmental exposure challenges the REACH revision, the Zero Pollution Ambition and more broadly the Green Deal will pose. A worked-out proposal for consideration by the members will be circulated in August. Recognising the different levels of information available across the metals/inorganics, the programme will need to ensure that both data-poor as well as data-rich substances would be able to identify the added value of the programme. Consortia, commodities, associations and companies are invited to send comments on the proposal that will be further discussed by the Chemicals Management Steering Committee on 31 August (more information: Violaine Verougstraete and Hugo Waeterschoot).

OUTREACH

OTHERS

UN GHS: informal Working Group meeting to discuss the genotoxicity criteria

Sam Buxton (Nipera) kindly attended the third meeting of the UN GHS Informal Working Group on genotoxicity criteria on 8 July. This working group was initially set up to discuss the revision of the wording of criteria for classification into Category 1B as it was creating some confusion, in particular when referring to the demonstration of "the ability of the substance or its metabolite(s) to interact with the genetic material of germ cells." The EU submitted a proposal and the UN GHS sub-committee agreed with the set-up of an Informal Working Group (IWG) chaired by Joint Research Centre (JRC).

During the first meeting in March 2021, it was proposed to extend the Terms of Reference and the work programme to cover Categories 1A and 2. A second IWG meeting took place on 25 May 2021. The discussion on the Category 1B criteria was initiated in July. Some changes were proposed to the definitions and toxicity tests contained in the UN GHS. Industry can submit comments on the proposed changes, summarised in two documents that will be circulated to the Human Health Taskforce by 3 September (more information: Samuel Buxton, Claudine Albersammer and Violaine Verougstraete).

CALENDAR

Here below a non-exhaustive list of the meetings that are planned so far for after the summer 2021.

Please save the dates for the meetings of interest for you.

For meetings at Eurometaux

For the moment due to the current situation, it will be possible to join our meetings by Webex (links to join will be sent ahead of the meetings).

Any further update, decisions and/or cancellations will of course be communicated in due time.

For meetings at ECHA

ECHA meetings, including those of formal ECHA bodies, will be held remotely until further notice. ECHA will keep the situation under review and will provide any further information as appropriate. This information is published on ECHA's website

Further information on the COVID-19 situation information can be found on the ECDC website

- 31 August: Chemicals Management Steering Committee Meeting
- 06-10 September: ECHA RAC-58 & SEAC-52 Meetings
- 13-17 September: ECHA RAC-58 & SEAC-52 Meetings
- 21 September: Risk Management Taskforce Meeting
- 23-24 September: ECHA MB-63 Meeting
- 22-23 September: ECHA Committee Meeting TBC
- 27 September-1 October: Chemicals Management Autumn week
- 05-06 October: WPC meeting TBC
- 11-15 October: ECHA MSC-75 Meeting
- 26 October: Evaluation TF Meeting
- 10 November: CARACAL TF Meeting
- 18 November: Water TF Meeting
- 17-18 November: CARACAL-41 TBC
- 22-26 November: ECHA RAC-59 & SEAC-53 Meetings
- 29 November-3 December: ECHA RAC-59 & SEAC-53 Meetings
- 08 December: Chemicals Management Steering Committee Meeting
- 07-08 December: ECHA Committee Meeting (TBC)
- 13-17 December: ECHA MSC-76 Meeting
- 15-16 December: ECHA MB-64 Meeting
- 21 December: Risk Management Taskforce Meeting

GENERAL INFORMATION & ACRONYMS

Follow the logo and check out our new Metals Gateway website.



This website is a (new) one stop information source for regulators & risk assessors dealing with metals/metal compounds and is tailored to the specific needs of the metals industry sector.

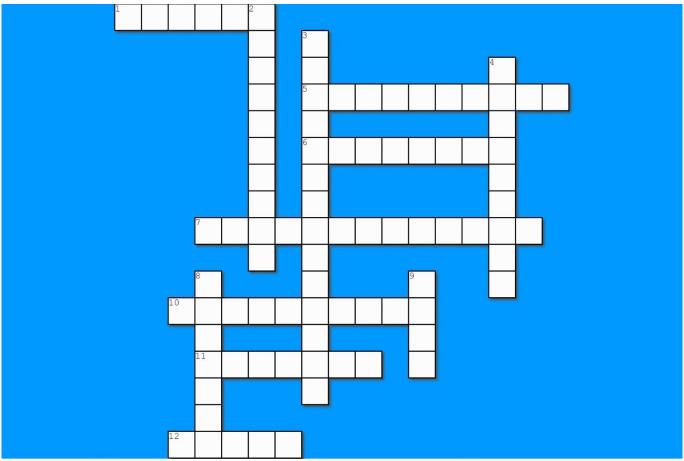
A continuously updated list of acronyms is available under the Reach Metals Gateway (RMG)

Thank you for reading us, and if you fancy some fun & games please go to the last pages.

CHEMICALS STRATEGY for **ZENITUDE**



Summer crossword



ACROSS

- 1. Massive against what?
- 5. One Substance, One....
- 6. Linked to Sustainability
- 7. Soon to be launched database
- 10. What is high-level?
- 11. What can be circular?
- 12. What kind of 'free' is the CSS aiming for?

DOWN

- 2. What can a 'worst case' be?
- 3. Important process ongoing or upcoming for Pb, Ag, Cu
- 4. What are scrap metals important for?
- 8. CM Team will soon include two
- 9. What can be green and has objectives?

Name Quiz

Can you link these – sometimes unknown but always exceptional – women scientists with their inventions?

1/ Lise Meitner - 2/ Mary the Jewess - 3/ Barbara McClintock - 4/ Marie Maynard Daly 5/ Ada Lovelace - 6/ Alice Augusta Ball - 7/ Dorothy Hodgkin

A.	Born 1921 - Chemist who studied heart health	
	She was the first African American woman to earn a PhD in	
	chemistry. In her work, she made important strides in research	
	around the connection between heart health and cholesterol.	
B.	Born 1892 - Chemist who cured leprosy	
	She was a chemist who developed a medical treatment for	
	Hansen's disease (leprosy) when she was just 23 years old.	
C.	Born 1815 - The first computer programmer. Unquestionably	
	one of the most important women in science history.	
	It is her work (with Charles Babbage) on the Analytical Engine	
	that has led to her being known as the first computer	
	programmer	
	She was the daughter of Lord & Lady Byron	
D.	Born around 0-200 CE – The first known alchemist	
	She lived in Egypt and invented processes and apparatuses that	
	were used for centuries after that. Her story became something	
	of a legend in later Arabic and Christian writings. Her work	
	formed a foundation for modern chemistry	
Ε.	Born 1902 - Discovery of jumping genes	
	We live in an age where we have mapped the human genome	
	and developed tools such as CRISPR to edit the building blocks	
	of life, but all of this was possible thanks to her dedication and	
	lifelong study into genetics. For this she won the Nobel Prize	
	for Physiology in 1983	
F.	Born 1878 – Contributed to the discovery of nuclear fission	
	She shared the Enrico Fermi Award (1966) with the chemists	
	Otto Hahn and Fritz Strassmann for their joint research that led	
	to the discovery of uranium fission.	
G.	Born in 1910 – Discovered the structure of insulin	
	She attended a state secondary school where only boys were	
	allowed to study chemistry, but she fought the system to be	
	enrolled. Eventually, she was admitted to Oxford where she was	
	recognised as an exceptional student and obtained a first class	
	honours degree in chemistry in 1932. She obtained her PhD from	
	Cambridge in 1936 and undertook research mapping the	
	architecture of cholesterol and examining the structure of	
	penicillin, essential to creating a synthetic version of it.	

Name Quiz: 1/ E - 2/ D - 3/ E - 4/ A - 5/C - 6/ B - 7/G.

Crossword:

Across: I/Powder - 5/ Assessment - 7/Multimetallic - 10/Roundtable - 11/Circular - 12/Toxic

Down: 2/ Reasonable - 3/ Classification - 4/Recycling - 8/ Lorenzo - 9/ Deal