

Forum on Fertilizers and Nutrients for Growth

19 October | 15:00 - 18:00

European Parliament, ASP building, Room A1H1



October 2016

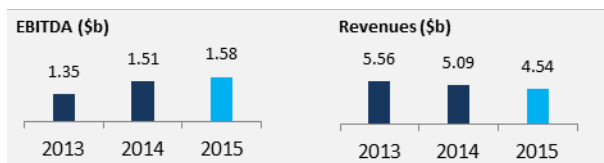
EU Regulation as Framework
for Fertilizer Producers

Dr. Thomas
Mannheim,
Head of Global R&D
Premium Products

EuroChem and introduction
Current Situation with EU 2003/2003
Expectations on New Regulation
Reality of the draft
Proposal of Fertilizer Producer (EuroChem)



- **3 Nitrogen plants** (2 in Russia, 1 in Belgium) - 3.0 MMT⁽¹⁾ of ammonia and 8.9 MMT of total N fertilizer product capacity.
- **3 Phosphate plants** (2 in Russia and 1 in Lithuania) - 2.5 MMT of MAP/DAP – and JV in China. 5.1 MMT of total P fertilizer & feed product capacity
- Total **annual fertilizer/feed capacity of 14.0 MMT**, including c.2 MMT of specialty products
- **Vertical integration:** own raw materials, port terminals, rail stock, construction/repair works, Europe/CIS distribution capacity
- **Natural gas operator** (Russia) - 1.1bn m³ of annual capacity (c.25% of EuroChem's annual consumption)
- **Apatite** (Russia) - P₂O₅-rich (37%-38%) and low-MER⁽²⁾ content (0.057) apatite ore (2.5 MMT per year) covers c.75% of own production needs for all phosphate plants and Antwerp, additional volumes from Kazakhstan project
- **Iron ore** as a co-product of apatite mining: up to 5.6 MMT of iron ore (Fe content 63.5%)
- **Logistics** assets include transshipment capacity of c.8.8 MMT in Russia and c.3.5 MMT in the EU, ~ 6,400 own rail stock/depot
- **Sales** : global platform anchored on EuroChem Agro and CIS presence
- **Projects**
 - **Potash (K) : 2 greenfield projects in Russia** with targeted capacity of over 8.3 MMT of KCl per year. First ore 2017/18.
 - **Ammonia** – 1MMT facility in close proximity to Phosphorit (Russia/Baltic Sea), startup 2018
- Total employees: >23,400



Raw materials

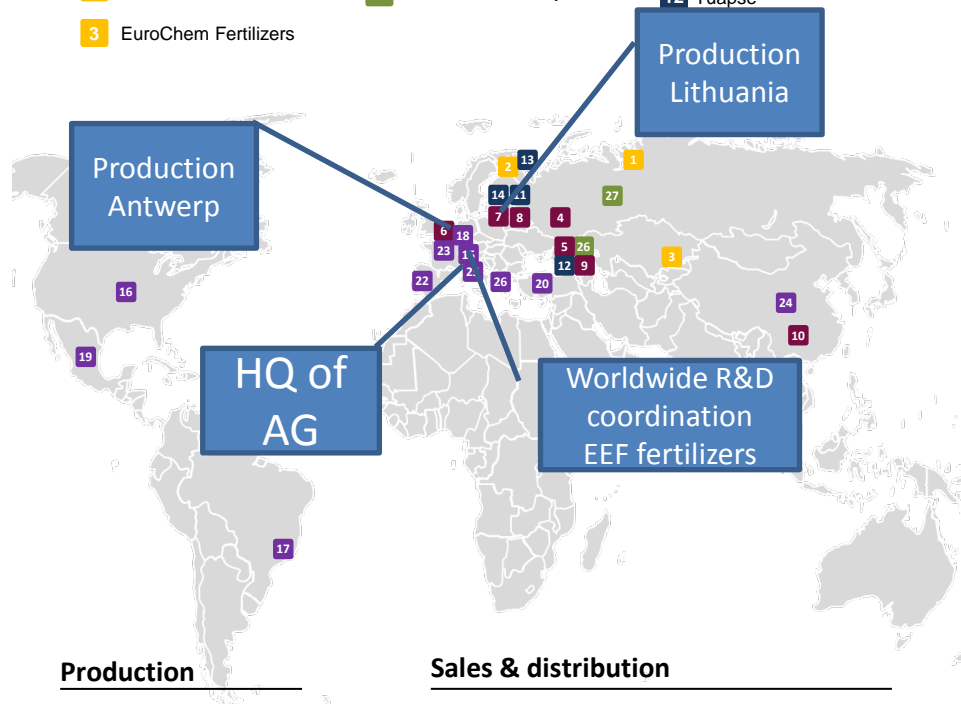
- 1 Severneft-Urengoy
- 2 Kovdorskiy GOK
- 3 EuroChem Fertilizers

Potash projects

- 26 EuroChem-VolgaKaliy
- 27 EuroChem Usolskiy

Logistics

- 11 Ust-Luga
- 12 Tuapse



Production

- 4 Novomoskovskiy Azot
- 5 Nevinnomysskiy Azot
- 6 EuroChem Antwerpen
- 7 Lifosa
- 8 Phosphorit
- 9 BMU
- 10 EuroChem Migao

Sales & distribution

- | | | |
|----------------|--------------|-----------|
| 15 Switzerland | 19 Mexico | 23 France |
| 16 USA | 20 Turkey | 24 China |
| 17 Brazil | 21 Singapore | 25 Italy |
| 18 Germany | 22 Spain | 26 Greece |

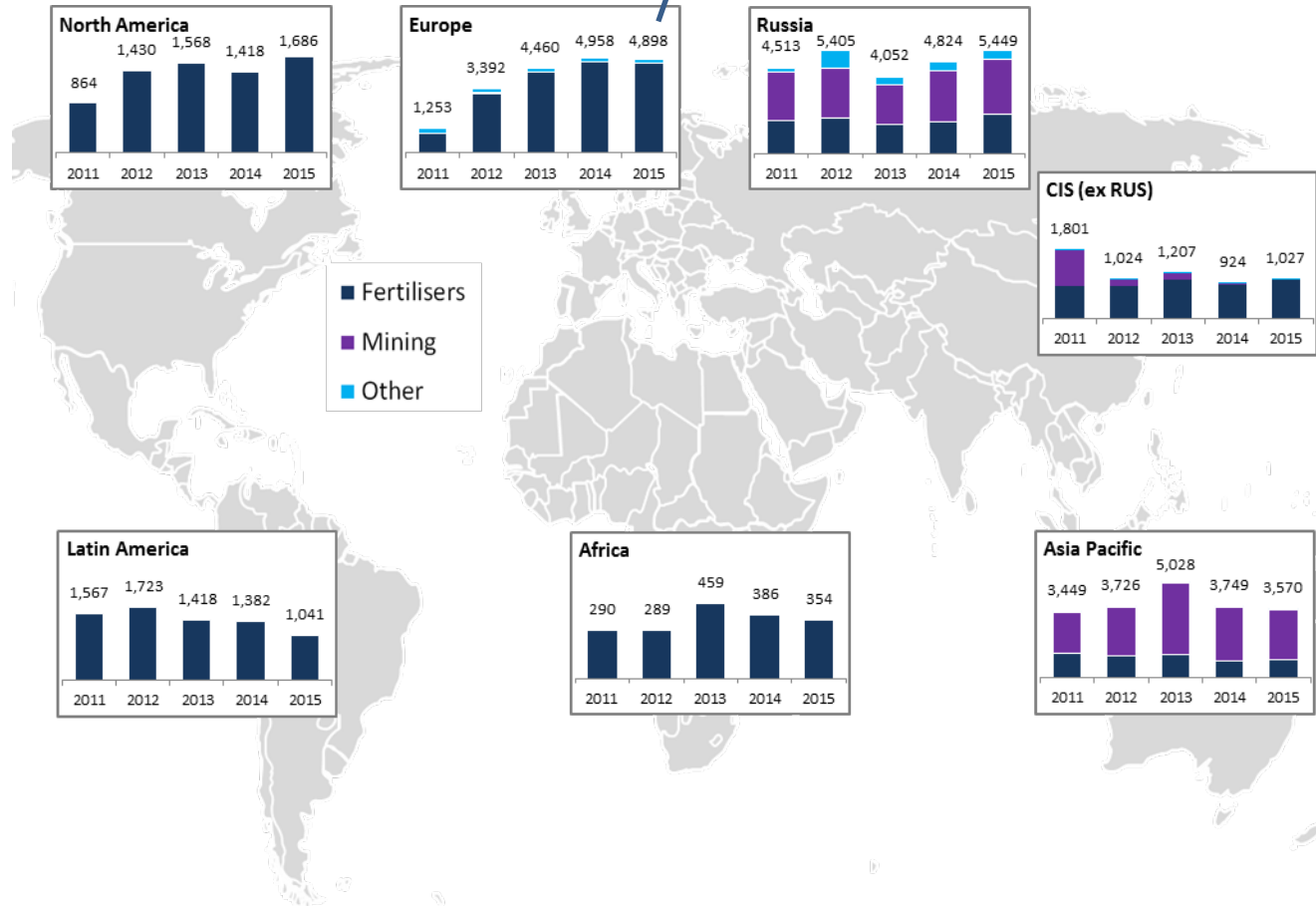
(1)MMT : million metric tonnes; (2)MER : minor element ratio.



Europe
(36 % of total fertilizer sales in 2015) sales

Group sales (KMT)

- #1 in Russia/CIS
- #2 in Europe, anchored by Europe EuroChem Antwerpen / Agro (acquired 2012)
- Growing presence in North America supported with acquisition of Bentrei (2015)
- Diversified presence in other markets
- Entering transformational stage with potash



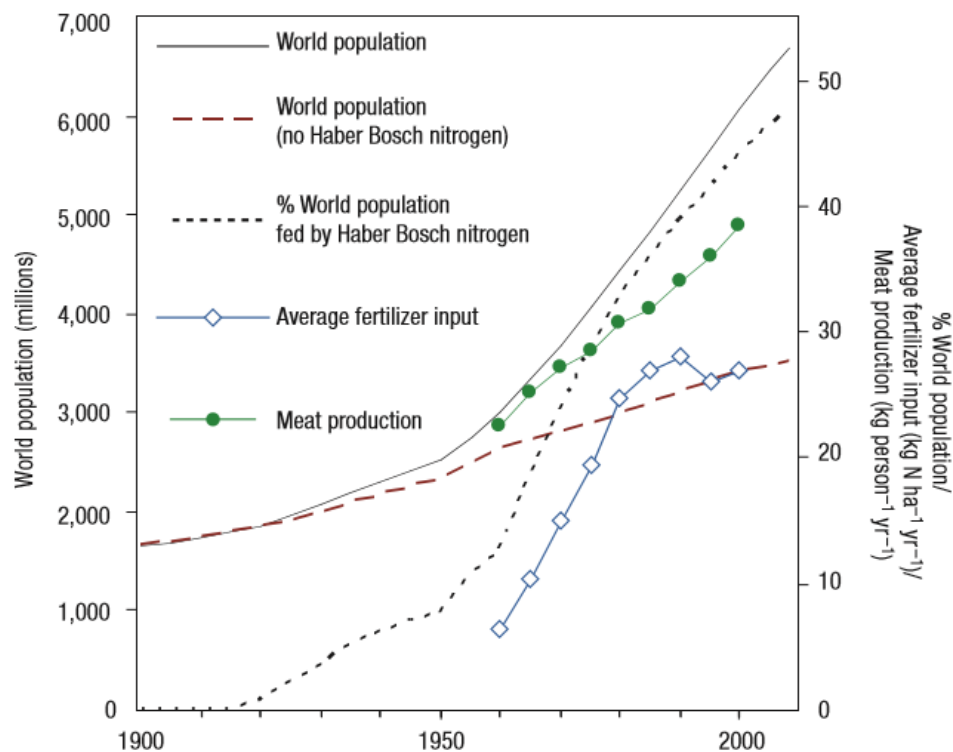
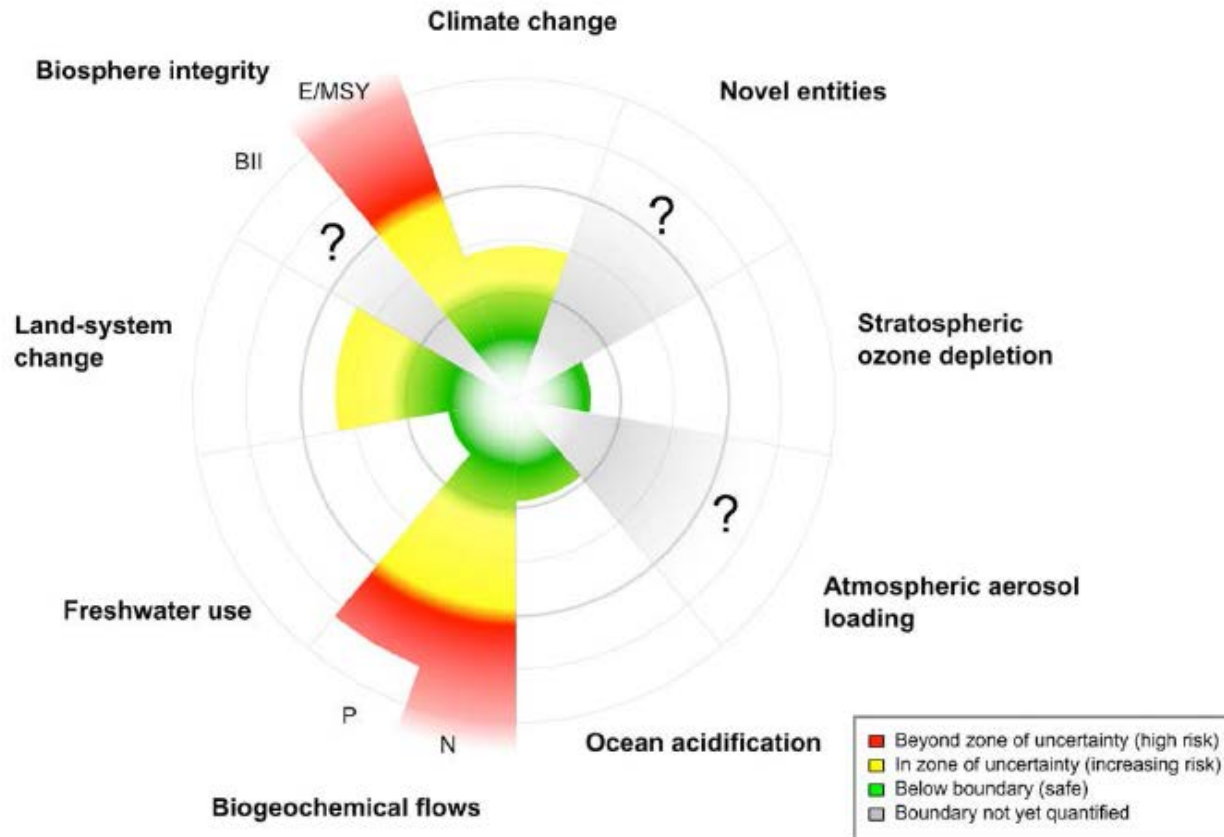


Figure 1 Trends in human population and nitrogen use throughout the twentieth century. Of the total world population (solid line), an estimate is made of the number of people that could be sustained without reactive nitrogen from the Haber–Bosch process (long dashed line), also expressed as a percentage of the global population (short dashed line). The recorded increase in average fertilizer use per hectare of agricultural land (blue symbols) and the increase in per capita meat production (green symbols) is also shown.

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But: Exceeded nutrient impacts burst global boundaries



Steffens et al. 2008

- ◆ Agronomical:
- ◆ Feed crops for high yield and quality
- ◆ Easy to handle and to apply
- ◆ Available at the right time with the right demand
- ◆ Right nutrient balance
- ◆ High agroeconomical value (cheap(!))
- ◆ High quality (chemical, physical)

- ◆ Conformity to regulations
- ◆ Local
- ◆ Regional
- ◆ International
- ◆ Safety and security
- ◆ Production
- ◆ Logistics

- ◆ Climatic:
- ◆ Low carbon footprint
- ◆ Raw materials
- ◆ Production
- ◆ Logistics
- ◆ Application
- ◆ Field

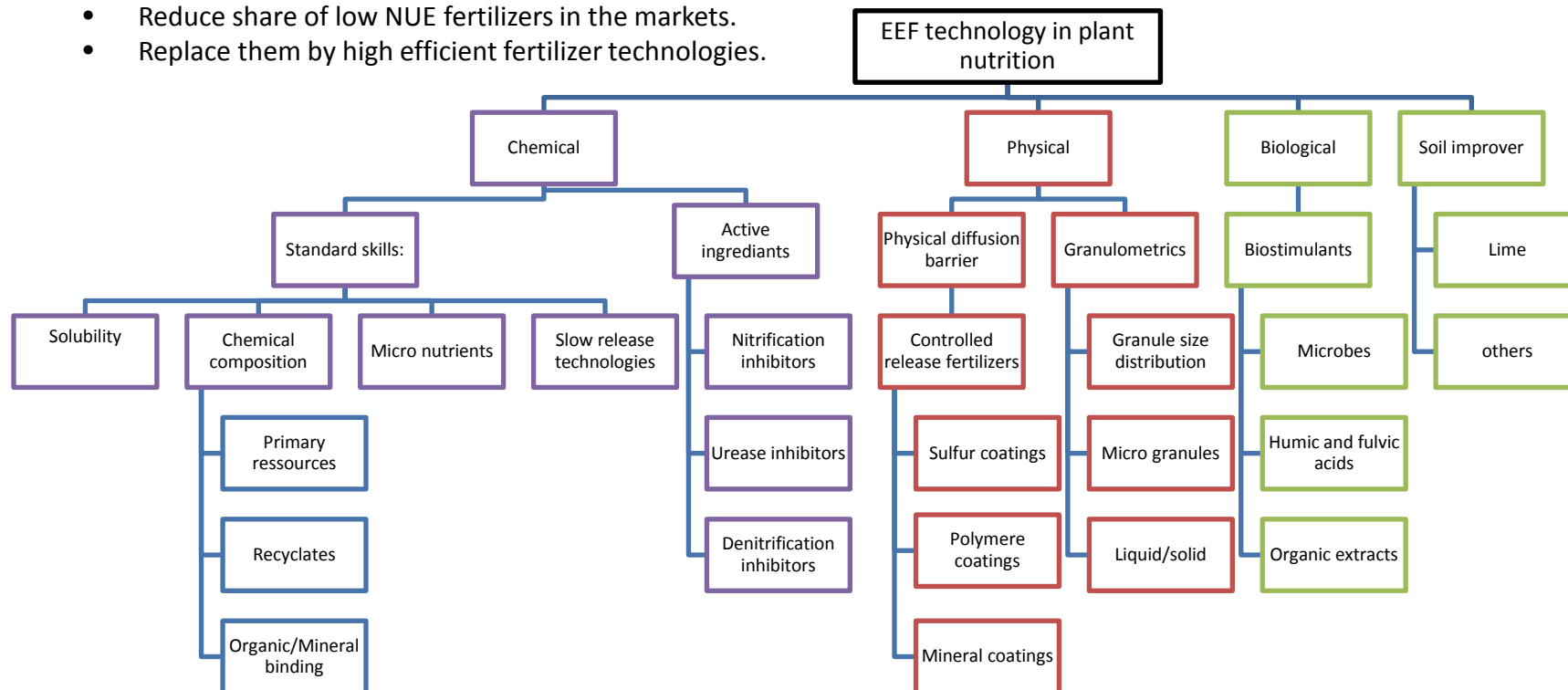
- ◆ Environmental
- ◆ Low ecotoxicity, low toxicity
- ◆ High efficiency,
- ◆ Water pollution, eutrophication
- ◆ Impacts on biodiversity
- ◆ low losses (gaseous, leaching etc)
- ◆ low in contaminants (organic, mineral)
- ◆ Low energy input in production/transport
- ◆ Biodegradability
- ◆ Hygenic issues
- ◆ Low natural resources requirement

What Fertilizer Industry can do: EEF technologies in plant nutrition



Tasks for EuroChem's R&D:

- Introduce available and develop pipeline technologies to increase nutrient efficiency of fertilizers which meets the future requirements for providing nutrients for feed and food under sustainable conditions on ecology, climate and socio-economic requirements
- Reduce share of low NUE fertilizers in the markets.
- Replace them by high efficient fertilizer technologies.



Fertilizer Industry has substantial interest to be part of the solution, and not part of the problem!

Stable, reliable and harmonized legislation for most mineral fertilizers in Europe: Simultaneously 28 national regulations.

- ❖ Stable, reliable and harmonized legislation for mineral fertilizer in Europe: Covers 28 national regulations by one EU regulation,
 - ❖ Distinctive quality criteria, but only for mineral fertilizer
 - ❖ Minimum requirements of nutrient efficacy (e.g. phosphate solubility)
 - ❖ Low tolerances in nutrient content and solubility (agronomical efficiency)
 - ❖ Valid, science based and transparent product types for mineral fertilizers
 - ❖ Clear labelling= Enables farmers to compare different mineral fertilizer by proven and their guaranteed properties
 - ❖ EU-fertilizer = international quality standard
 - ❖ Enables farmers to take responsible decisions in respect on ecology, economy and society for mineral fertilizers

- ❖ What we miss:
 - ❖ Harmonized standards for all fertilizers (including organics).
 - ❖ Replacement of national fertilizer regulations.
 - ❖ Transparent framework for EEF technologies
 - ❖ Reliable maximum contents of contaminants (pathogenes, biological active substances, pharmaceuticals, organochemical residues, heavy metals), valid for all fertilizing products.

- ❖ Stable, reliable and harmonized legislation for all fertilizing products in Europe: Replace 28 national regulations by one EU regulation + EC 264/2008 (mutual recognition) by a common guideline for Europe's fertilizing products.
 - ❖ Distinctive quality criteria
 - ❖ Clear definition of mineral, organic, organo-mineral fertilizers
 - ❖ Focus on enhanced nutrient efficiency: Minimum requirements on nutrient's plant availability (e.g. phosphate solubility)
 - ❖ Low tolerances in nutrient content and solubility (agronomical efficiency)
 - ❖ Valid, science based and transparent for all fertilizing products which are traded in any behalf
 - ❖ Open minded and set up framework for supporting technological progress in EEF technologies
 - ❖ Reliable maximum contents of contaminants (pathogenes, biological active substances, pharmaceuticals, organochemical residues, heavy metals), valid for all fertilizing products
 - ❖ Consistent and complete rules on declaration
 - ❖ Easy transition of fertilizers registered under 2003/2003 to new regulation
 - ❖ Obvious for Farmers by open declaration
 - ❖ Enables to compare different fertilizing products by their guaranteed properties
 - ❖ Ensures farmers to take responsible decisions in respect on ecology, economy and society
 - ❖ Conformity to proven quality standards of EU fertilizers (labelled)
 - ❖ Keep understandable and learned definitions

- ❖ New Regulation was Highly Welcome by Industry

Voluntary harmonized legislation means NO harmonized legislation for fertilizing products in Europe:

- ❖ Keep 28 (27?) national regulations and add one EU regulation. For what?
 - No common guideline for fertilizer producers
- ❖ Additionally: EC 264/2008 still in place (plus Norway, Switzerland and Turkey).
- ❖ Additionally: Mix up of fertilizers (containing nutrients) with improvers (without nutrients) under „fertilizing products“
- ❖ Additionally: For residues national waste regulations or EU New Regulation can be chosen by supplier, as wastes will be included as fertilizing products (**without proven efficacy (!)**).
- ❖ Fertilizers and wastes will overlap

Highly complicated legal situation where producers can choose regulation with lowest thresholds for their product to introduce it to EU market.

Reality of the draft (2) Details to be discussed

❖ Unclear quality criteria:

- ❖ **Inorganic** (mineral) fertilizers may contain up to **7.5 organic carbon**, means 13 % of organic matter by mass.
 - ❖ **Definition Inorganic:** Collective designation for the chemical elements **other than carbon**, for the **carbon-free compounds**. (Except for the carbon oxides CO₂ [carbon dioxide] and CO [carbon monoxide] as well as the carbonates and carbides) and for systems or processes of the non-living nature. (lexicon der Biologie, Spektrum der Wissenschaft)
- ❖ Lower minimum content of nutrients in mineral fertilizers (e.g. for NPK 3% per nutrient instead of 5, for P₂O₅ and K₂O; minimum 9 % total nutrient content vs 20 %). Straight N: 10 N % etc.
- ❖ No minimum requirements of nutrient efficacy (e.g. phosphate solubility)
- ❖ Higher tolerances in nutrient content and solubility (agronomical efficiency)
- ❖ Traded slurry and digestates not covered by the NR.
- ❖ Restrictions on new technologies in two ways:
 - ❖ No minimum requirements on efficacy at all: Excludes enhancement of NUE
 - ❖ High threshold for EEF technologies e.g.:
 - Controlled Release Fertilizers
 - Biostimulants
- ❖ Reliable maximum contents of contaminants for „Inorganic fertilizers“, for other fertilizing products: Not yet fixed for all contaminants (e.g. Zn, Cu) organic, inconsistent for improvers (liming material, soil improvers).
- ❖ Probably high efforts for transition of fertilizers registered under 2003/2003 fertilizer type to new regulation (e.g. for NPK)

Reality of the draft (3): Misleading definitions

- ❖ Annex III, part 1, 7.(a): ...shall not mislead the user...
- ❖ Difficult to understand for Farmers because of switch of definitions
 - ❖ Declaration confusing. Comparability of fertilizing products difficult.
 - ❖ No distinction between „fertilizers with plant nutrients“ and „improvers“
 - ❖ How give requested instructions for indented use without minimum efficacy standards?
 - ❖ Organic fertilizers: No efficacy/solubility for P and K in organic fertilizers , but to declared for Ca. Mg, S and Na?
 - ❖ Replacement of „compound“ by „mix“, but in PFC 1 (C)(II)(B), „compound“ is used instead of „mix“
 - ❖ Fertilizing Product Blend: Mineral fertilizers coated with NI = Blend of Ni and fertilizer?
 - ❖ Description of all Components > 5 %: Raw materials (e.g. Rock Phosphate)?
 - ❖ Responsible decisions in respect on quality, ecology, economy and society are difficult.
 - ❖ New EC/CE fertilizers standard is levelled down compared to EC 2003/2003 (export markets?)
 - ❖ Confusing definitions
 - ❖ Mix up of mineral and organic fertilizers by definition: Inorganic fertilizer may contain up to 13% of organic substance by mass
 - ❖ Organic/organic-mineral/inorganic(?)>better: organic, organic-mineral, mineral fertilizer
 - ❖ Blend; Compound/Complex fertilizer

Completely harmonized legislation for fertilizing products in Europe:

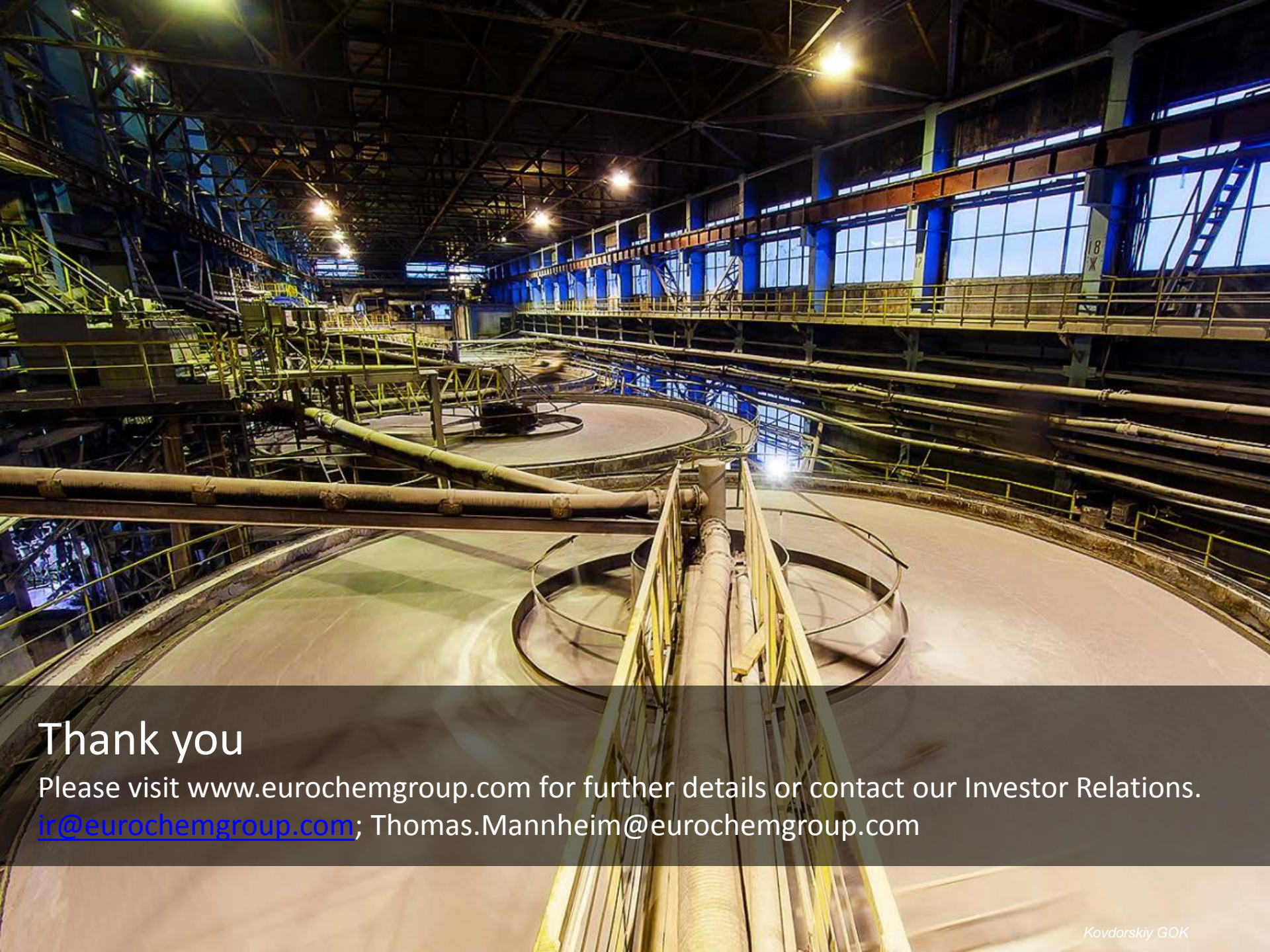
- ❖ Replace 28 (27?) national regulations by one EU regulation.
- ❖ Additionally: EC 264/2008 still in place, but does not affect fertilizer regulation
- ❖ Clear distinction of fertilizers (with nutrients) and improvers (without nutrients)
- ❖ Clear distinction between wastes and fertilizers as well as between plant protection and fertilizers

❖ Keep high quality criteria

- ❖ **Replace term „Inorganic“ by Mineral“.**
- ❖ **For „Mineral Fertilizers“ Set maximum Corg-Content at 1 %.**
- ❖ **Keep minimum nutrient content at the level of 2003/2003 regulation**
- ❖ **Minimum requirements for Phosphate solubility** (min. 55 % solubility in formic acid for rock soft rock phosphates)
- ❖ **Keep existing tolerances in nutrient content and solubility (agronomical efficiency)**
- ❖ **Include traded slurry and digestates to New Regulation**
- ❖ **Support EEF technologies**
 - ❖ Set minimum requirements on efficacy at all to enable enhancement of NUE
 - ❖ Adapt high threshold for EEF technologies e.g.:
 - Controlled Release Fertilizers: Expand timeframe for biological degradation
 - Biostimulants: Enable the inclusion of other types of beneficial MO and production pathways
- ❖ **Reliable maximum contents of contaminants for „inorganic fertilizers“ (in place), but: requested also for other fertilizing products: e.g. setting maximum levels for all contaminants (e.g. Zn, Cu).** No PAH for CMC 4: Energ. Crop. Dig.; CMC 6: food ind-by-prod; CMC 11: certain animal by-product
- ❖ **Automatic transition of fertilizers under 2003/2003 regulation to new regulation (e.g. for NPK)**

- ❖ Annex III, part 1, 7.(a): ...shall not mislead the user...
- ❖ Easy to understand by Farmers: Remain with learned definitions
 - ❖ Declaration easy to understand. Comparability of fertilizing products.
 - ❖ Set efficacy standards (e.g. minimum requirements of phosphate availability)
 - ❖ Organic fertilizers: Efficacy/solubility declaration for P and K even in organic fertilizers
 - ❖ Remain with learned definitions:
 - „Blend“: Physical mix of fertilizer
 - „Compound NPK“: Physical blend of different straight fertilizers
 - „Complex NPK“: All nutrients with same concentration within each granule
 - ❖ Fertilizers with inhibitors should remain as fertilizer containing inhibitor, not as „blend of two fertilizing products“
 - ❖ Clear definition which components have to be declared (status of manufacturing process)
 - ❖ Enable responsible decisions in respect on quality, ecology, economy and society.
 - ❖ Keep high EC fertilizers standard of EC 2003/2003 (even for export markets), for all products.

- ❖ New Regulation aims in the right direction: Trying to reduce nutrient input to the environment.
- ❖ Voluntary Harmonization: As National regulations are still in place, New Regulation will keep disadvantages of EU 2003/2003 and simultaneously skip already achieved quality standards for mineral fertilizers
- ❖ New Regulation aims to increase share of recycled nutrients.
 - ❖ Target: Replace mineral fertilizers.
 - ❖ **But: If availability to plants is not defined as a criteria, leads to additional fertilizer need or yield and soil fertility is endangered.**
- ❖ Doubt, if the New Regulation helps to increase Nutrient Efficiency.
- ❖ **Therefore we see a risk of low acceptance of New Regulation.**
- ❖ Beside this: Please give us time to adapt to the New Regulation. Two years after publication should be sufficient for all producers.



Thank you

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