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Background

Within recent years HELCOM identified several earlier unknown major point sources of nutrient pollution in the BSR countries related to production of phosphate fertilisers. All of those sites required pollution mitigation measures to be taken urgently, but on the other hand represented typical "low-hanging fruit" solutions. Based on these findings, organizations within the Coalition Clean Baltic network have raised attention to the need of evaluating the whole fertiliser production/logistics chain.

One of the areas where CCB plans to assess potential losses of this kind are the port terminals for handling fertilisers. According to our knowledge and recent cases e.g. in Sweden, nutrient losses from ports facilities for handling fertilizer and fertilizer-related materials can constitute considerable point sources of nutrient pollution (up to several tons of directly bioavailable nitrogen and phosphorus per year). Such losses may occur mainly during ship loading/offloading operations, as well as from temporary open storage and improper stormwater management at port facilities. At the same time, volumes of such cargo are steadily growing in Baltic Sea ports (according to some sources, up to 33 million t/year), hence representing an emerging issue to be dealt with by HELCOM, to mitigate potential nutrient inputs to the Baltic Sea.

Currently, none of the EU legislative acts (e.g. EU IED) covers environmental aspects of port handling facilities for fertilizers. Globally, this issue is mostly covered in national regulations, port by-laws and codes of conduct (e.g. in Canada, USA and Australia). On the other hand, if port facilities are adequately planned and managed, even potential losses from fertilizer cargo handling can be recycled.

Based on the above, CCB suggests to assess the situation with bulk fertilizer handling in major BSR ports with a view to evaluate their potential environmental impacts and suggest mitigation measures, e.g. development of HELCOM actions to minimize cargo losses in BSR harbours, to mitigate nutrient pollution of the Baltic Sea. CCB offers to collect relevant information including on best practices for fertilizer loading in ports as an input for further HELCOM actions, if those will be considered necessary. Such compilation can be made available to HELCOM at the next meeting of HELCOM MARITIME.

To enable this work, CCB would like to invite the Contracting Parties to share relevant information on existing terminals for handling fertiliser cargo (cargo turnover, capacity, storage and loading technology, stormwater management), national requirements for minimizing pollution inputs during fertiliser loading/offloading operations in ports and examples of relevant best practices applied in the Baltic ports. If agreed, such information should be made available through HELCOM Secretariat.

HELCOM MARITIME 16-2016 took note of the information submitted by CCB on potential nutrient losses from port facilities handling fertilizer cargo, expressed interest in getting quantitative estimations of the magnitude of this source of nutrient pollution and invited CCB to provide further details for the next MARITIME meeting. According to some of the Contracting Parties this issue in general falls under the environmental permitting procedure of ports and permits to companies handling nutrients. As such permits are usually handled by EPAs and not by Ministries of Transport, CCB also addresses this issue to PRESSURE.

Action requested

The Meeting is invited to take note of the attached additional information and discuss it as appropriate. Contracting Parties are invited to share relevant information as suggested above.

Potential nutrient losses from port facilities handling fertilizer cargo

Environmental concerns

Dry bulk, packed and liquid fertilizer cargoes carried on vessels can enter the marine environment at different phases during transport: loading, transshipment, unloading and washing of cargo holds.

According to the recent [study](#), experts assume that about 0.05% of bulk cargo can be lost (e.g. due to unloading with grabber, washing cargo contaminated surfaces and holds), although this value may depend on the physical properties and on the commercial value of the good. Based on the total bulk quantities shipped worldwide of estimated 4.3 billion tons, it is likely that at least 2.15 million tons per year are discharged into the oceans, mainly the coastal sea. Shippers provided oral information during the IMO meetings that 60–100 tons of cargo slurry are typically discharged after washing per hold. An average bulker has 5 cargo holds (4 to 7 holds per vessel are common). In 2013, 10,800 bulk cargo vessels were operating worldwide. Assuming that the slurry contains 5% of solids in washing water and 20 washing operations per year and per vessel are likely to be carried out, it was estimated that 3.2 million tons of solid bulks are discharged per year. Despite that the Baltic Sea is a Special Area under MARPOL Annex V, such washing water discharge may still occur as fertilizer cargo is usually not classified as containing HME (hazardous to the marine environment) substances and there is lack of reception facilities for such cargo residues in ports.

Most dry bulk commodities are prone to spillage and dust pollution, posing environmental problems even for ports which handle comparatively low tonnages. Ports which handle bulk materials - either incoming, outgoing or both - are confronted with critical ship-to shore transfer problems, which are far more complex than those involving ship loading or unloading of general cargo or containers. The dry bulk cargo also needs to be stored, if only temporarily, within the port zone. It also needs to be conveyed between the quayside and the storage location. A major environmental problem, common to all three of these operations and unique to dry bulk cargo handling, is that of material spillage and dust pollution. In recent years considerable advances have been made in environmentally acceptable methods of bulk handling in ports.

Some dry bulk cargoes have high concentrations of organic material and/or nutrients, such as fertilizers and animal feed, with high biological oxygen demands, large spillages of these may cause localized nutrient enrichment and oxygen depletion. This may result in the suffocation of marine life in the vicinity.

Even with a conservative estimate of 0,05% loss of bulk cargo due to unloading operations and cleaning of ship holds, a potential loss from 33 million tons of fertilizers handled in the Baltic Sea ports in 2013 (see estimates below) would be ca. 16,5 thousand tons a year.

Overview of fertilizer handling in Baltic Sea ports

CCB has carried out preliminary overview of the Baltic Sea ports that are handling fertilizers and based on several sources, including the Baltic Port List 2014 and the websites of individual ports, obtained the following country-wise information for fertilizer turnover in Baltic Sea port in 2013. Fertilizers are handled in at least 70 ports in the Baltic Sea Region.

Lithuania and Russia were ranked first in terms of volumes of fertilizer handling, while for Lithuania fertilizer cargo also play an important role for the port economy in general (accounting 20% of the total cargo turnover at Klaipeda port). Due to uncertainties with information from Polish ports, it is difficult to rank it in terms of fertilizer handling in ports.

Denmark

In 2013 Denmark had 21 ports having traffic volumes with fertilizers, with a total volume of 744 000 tonnes.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Kolding	222 000				
2. Randers	175 000				

3. Korsoer	85 000				
4. Aarhus	47 000				
5. Kalundborg	32 000				
6. Aalborg	25 000				
7. Aabenraa	23 000				
8. Koege	19 000				
9. Grenaa	19 000				
10. Hundested	17 000				
11. Holbaek	17 000				
12. Roedby	10 000				
13. Horsens	10 000				
14. Roenne	8000				
15. Vejle	8000				
16. Nakskov	7000				
17. Odense	7000				
18. Guldborgsund	5000				
19. Fredericia	4000				
20. Svendborg	2000				
21. Hobro	2000				

Estonia

In 2013 Estonia had 5 ports having traffic volumes with fertilizers, with a total volume of 1 972 000 tonnes. 11% of goods handled in Estonian ports in 2015 were nitrogen compounds and fertilisers (except natural fertilisers).

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Tallinn -	1 642 000	Fertilisers are handled at harbours of Muuga (1 633 000 mt) and Pajassaare (9000 mt)		X	
2. Sillamäe	283 000	Another source ¹ report 1,18 mln tons mineral fertilizers in 2013 (As no statistics on fertilizer transshipment are available for the Port of Sillamäe, the cargo turnover has been estimated on port bound railway shipments)			
3. Bekker	44 000				
4. Vene-Balti	3 000				

Finland

In 2013 Finland had 11 ports having traffic volumes with fertilizers, with a total volume of 2 310 000 tonnes.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. HaminaKotka	1 074 000	Mussalo harbour is specializing particularly in the transshipment of fertilizers, with the Dry Bulk and Liquid terminals.			
2. Uusikaupunki	772 000				
3. Kokkola	283 000	(Silverstone port)			
4. Siilinjärvi	129 000	(inland lake port)			

¹ [Baltic Transport Journal 1/2014, p.24](#)

5. Kaskinen	23 000			
6. Vaasa	16 000			
7. Pietarsaari	6 000			
8. Pori	3 000			
9. Tolkkinen	2 000			
10. Helsinki	1 000			
11. Kemiö	1 000			

Naantali port had in 2012 and earlier years handled and stored fertilizers.

Germany

In 2013 Germany had 12 Baltic ports having traffic volumes with fertilizers, with a total volume of 2 309 000 tonnes.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Rostock	1 527 000	In 2010 - 829 000 ton; The fertilizer quay is operated by Euroports Düngemittel Dienstleistung Rostock GmbH and is equipped with a ship loader with a capacity of 600 tons/hour, wagon unloading station, conveyor and belt system. There are two special fertilizer sheds with a storage capacity of 60,000 tons. The fertilizer export facilities are storing about 550 000 tons yearly.			
2. Lübeck	316 000	in 2010 419 000 ton			
3. Wismar	201 000	in 2010 165 000 ton			
4. Vierow	84 000				
5. Stralsund	57 000	in 2010 - 36 000 ton			
6. Flensburg	56 000	in 2010 72 000 ton			
7. Greifswald, Landkreis	33 000				
8. Wolgast	20 000	in 2010 - 18 000 ton			
9. Berndshof	9000				
10. Neustad / Holstein	2000				
11. Burgstaaken	2000				
12. Heiligenhafen	2000				
13. Kiel	0	(but had volumes in 2012. In 2010 17 000 ton			
14. Rendsburg(in Kiel canal)	0	but had volumes in 2012. in 2010 64 000 ton			
15. Sassnitz	0	in 2010 2000 ton			
16. Lubmin	0	in 2010 30 000 ton			

Fertiliser cargo turnover in German Baltic ports (in product groups for Nitrogen compounds and fertilisers/Chemical and natural fertilizer minerals) for year 2010 (Statistisches Bundesamt DE Statist)

Latvia

In 2013 Latvia had 4 ports having traffic volumes with fertilizers, with a total volume of 3 081 000 tonnes.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	

1. Skulte	45 000			
2. Riga	1414000	Riga Fertilizer Terminal and Alpha Osta terminal		
3. Ventspils	1566000			
4. Liepaja	56 000			

Lithuania

Port of Klaipeda is the biggest fertiliser handling port on the Baltic Sea.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Klaipeda	8 574 000	The port has 3 bulk fertilizer terminals, and 2 liquid fertilizer terminals	6 900 000	410 000	1 270 000

Other information: Klaipeda Seaport had successful fertilizers handling results in February 2015, + 2381 thousand ton y-o-y (year over year)

Poland

Cargo turnover and traffic volumes of fertilizer products need to be studied and cleared out for Polish ports. Information of cargo turnover of fertilizer products and raw materials for fertilizer production in Polish ports has not been possible to gather at this point.

The Baltic Port list 2014 (published by Centre for Maritime Studies, Turku University) notice "zero" for fertilizer traffic volumes for fertilizers for all Polish ports. The reason may be that fertilizers are hidden under headings like "chemicals" or "other cargo".

No traffic volumes of fertilizer in ports of Police and Gdansk, is obviously wrong, as fertilizer based industries can be found in these places.

The following information from some websites of Polish ports describe handling of fertilizers.

Port	Amount, mt*	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Gdansk	1 940 000	<ul style="list-style-type: none"> - <u>Chemikow quay</u> : handling (cap. 400 t/hr) and storage terminal (75 000 tonnes) in cooperation with Gdansk Phosphate Fertilizer Plant "Fosfory", for inorganic fertilizers, phosphate raw materials - <u>Przemyslowe quay</u>: inorganic fertilizers, handling capacity 400 t/hr; capacity for liquid cargos, as liquid fertilizers, with 300 t/hr - <u>Wislane quay</u>: handle and package dry chemical fertilizers - <u>Gorniczny basin</u>: railcar unloader for fertilizers 			
2. Gdynia	1 287 300	<ul style="list-style-type: none"> - Baltic Bulk terminal (BBT) exports Polish chemical products, primarily fertilizers. e.g. handle Polish ammonium sulphate and other fertilizer imports and exports. - BBT liquid products terminal (capacity 400 m³/hr) handle exports of ammonium nitrate 			
3. Szczecin –	1 700 000	- Major dry bulk cargo types			

Swinoujscie		transshipped and stored incl. Fertilizers. Liquid cargo as fertilizer products are also handled.			
4. Police (in Szczecin lagoon)	1 255 000	- <u>Bargin terminal</u> , Southern Wharf – load the products of fertilizers (conveyor capacity 3500 tons/day) - <u>Miljanka terminal</u> , for liquid products handling, e.g. ammonia			

* presented amounts are calculated as a sum of categories “other dry bulk” and “unknown dry bulk” from [Statistical Yearbook of Maritime Economy 2014](#) of the Central Statistical Office of Poland, as no other information of fertiliser turnover was found.

Russia

In 2013 Russia had 4 ports having traffic volumes with fertilizers, with a total volume of 7 302 000 tonnes.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Vyborg	579 000			X	
2. St Petersburg	6 023 000	Big Port-St Petersburg, Baltic Bulk Terminal			
3. Ust-Luga	493 000	Ust-Luga port is strongly expanding fertilisers transshipment since 2012. EuroChem was planning to launch in 2014 new Mineral fertilizers terminal for a target capacity of 5 -6 mln tons annually ¹ . The European Sulphur Terminal has also handled fertilizers.			
4. Kaliningrad	207 000	is the only Russian port capable of handling liquid fertilizers ¹ , but the liquid freight flow remains on a stable, but low level			82 000 (2013)

Sweden

In 2013 Sweden had 12 ports having traffic volumes with fertilizers, with a total volume of 255 000 tonnes.

Port	Amount, mt	Remark	Dry fertilisers		Liquid fertilisers
			bulk	packed	
1. Lidköping	134 000	lake Vänern			
2. Kristinehamn	40 000	lake Vänern			
3. Kalmar	19 000				
4. Klintehamn	16 000				
5. Luleå	12 000				
6. Umeå	10 000				
7. Mönsterås	8000				
8. Skellefteå	5000				
9. Söråker	3000				
10. Bergkvara	3000				
11. Trelleborg	3000				
12. Visby	2000				

It seems like some info is missing. YARA has ports/terminals in Köping and Norrköping, but Baltic Port list 2014, report zero fertilizers from these ports. According to Sveriges Hamnar Association, probably ammonium nitrate was also handled in ports of Köping, Sölvesborg and Norköping.