Nordic Ecolabelling Background document 102 Renovation of buildings/2.0, 13 September 2023

SCDA Comments, 27 October 2023

Nordic Swan Ecolabel's key drivers are circular economy, life cycle perspective and UN Sustainable Development Goals. EU Fit for 55 goal is an extremely important driver for building sector. Copper is a suitable material for buildings to contribute positively to these aspects. Copper is a fully recycled and recyclable building material, with very low carbon footprint as it is produced out of 100 % recycled raw materials. It produces no waste when installed or demolished.

According to Nordic Ecolabelling, sewage sludge is "the primary reason why Nordic Ecolabelling wants to limit copper as a material in tap water pipes and as a roof and facade material". There is no evidence of negative environmental impacts of copper in sewage sludge.

Copper's environment and health properties have been evaluated according to EU's Existing Substances Directive and thereafter following requirements of REACH registration. No risks of using existing products have been identified. Copper is not a hazardous substance according to CLP. Copper is not nationally prioritized substance and does not belong to phase-out nor risk reduction substances. Copper is approved for drinking water use by WHO and EU, and by type approvals in Nordic countries, as well as in 4 MSi system for approval of materials in contact with drinking water. No other ecolabelling nor sustainability certifying body is restricting copper use.

SCDA would like to refer to the previous comments SCDA comments about Swan New Buildings criterion O29 and add scientific and statistical references to each correction of Nordic Ecolabelling's background document. Sources for referenced information are attached as links and marked with yellow.

SCDA has provided for Nordic Ecolabelling sources with unbiased scientific evidence and statistics primarily from Swedish authorities during past consultations of Swan criteria for new buildings and renovations. Also renowned Nordic governmental research institutes SYKE and IVL provided evaluations of the criteria. No evidence of caused harm has been proven.

As there is no evidence of proven negative environmental effect, measurable benefit from the restriction criteria can neither be reported. An environmental requirement without verifiable problem to solve nor verifiable benefit is in breach of "the basic concept of Green Public Procurement, which relies on having clear, verifiable, justifiable, and ambitious environmental criteria for products and services, based on a life-cycle approach and scientific evidence base." Source: https://green-business.ec.europa.eu/green-public-procurement_en

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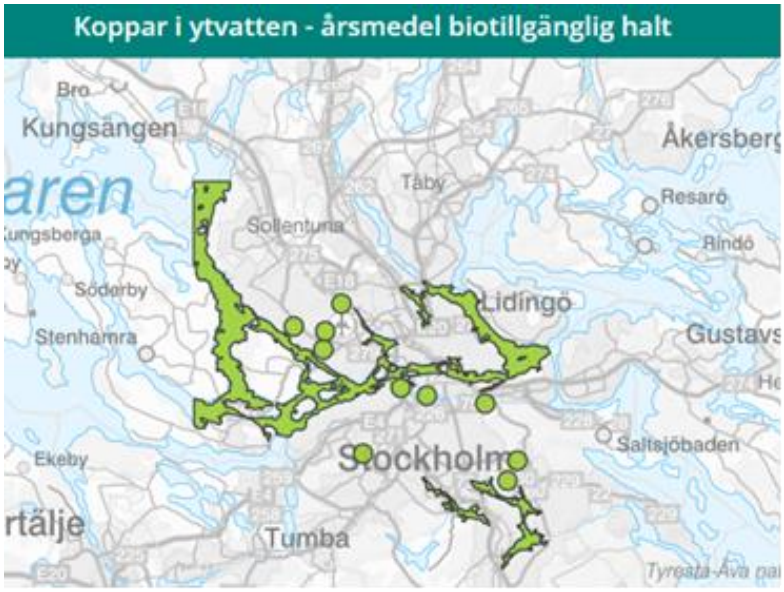
Introduction

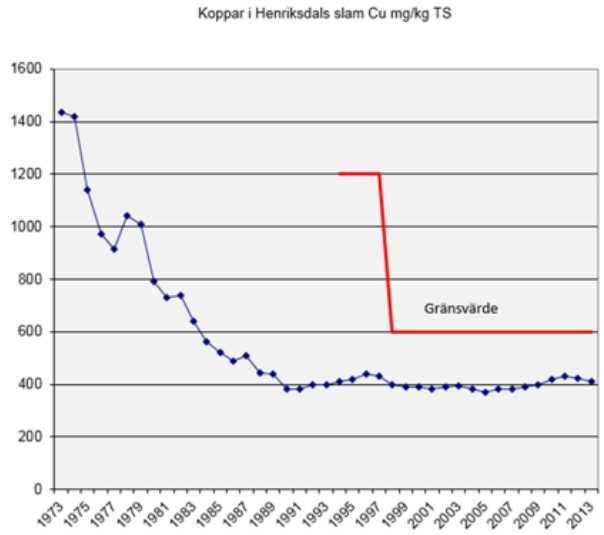
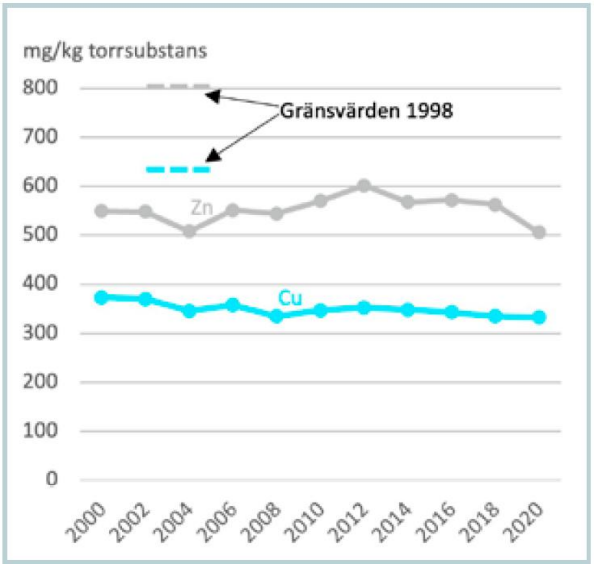
Copper concentrations in environment are determined by natural backgrounds. There is no evidence that diffuse emissions from copper drinking water tubes or roofs would cause elevated harmful levels of copper in water, sewage sludge or soil in Sweden as nowhere else either.

Sources:
Vattenmyndigheter: Samrådet om vattenförvaltning 2021, Status classification copper 2018
VISS water information system
Naturvårdsverket: Rening av Avloppsvatten i Sverige 2020
SCB: Utsläpp till vatten och slamproduktion 2018

Stockholm surroundings water quality; green = good status
Source: Stockholm City Miljöbarometer
https://miljobarometern.stockholm.se/miljogifter/koppar/koppar-i-ytvatten-biotillganglig-halt/compare:



Nordic Ecolabelling background document claims:	**SCDA corrections:**
"The largest sources of copper spreading into the environment are via tap water and road traffic. Sheet metal on the outside of buildings (roofs and facades) and contact cables for the railway are also relatively large sources. The primary recipients of the copper differ. For water mains, it is the sewage treatment plant, while the distribution of copper in road traffic primarily ends up in stormwater and soil. A predominant percentage (60–80%) of the copper entering the treatment plants originates from tap water pipes in properties."	All tap water and part of storm water run-off from roofs and facades end up in sewage treatment plants (STP). In Sweden copper emissions from all STPs have been estimated to be 3,4 % of annual diffuse copper emissions (without counting estimated emissions of antifouling paints into total). Source: SMED rapport 15 2005: Uppskattning av utsläpp för Cd, Hg, Cu och Zn på TRK-områden. This data is old but can give order of magnitude of the mentioned sources. How big share of copper flow to sewage treatment plants is made up by leaching from water supply systems, has only been estimated in Sweden by Stockholms Miljöförvaltning. Latest estimate is "more than 50%" thus according to this estimate components of water supplying systems could be source of 1,7 % of Sweden's diffuse copper emissions. Source: https://miljobarometern.stockholm.se/miljogifter/koppar/koppar-i-rotslam/.

	Release from water supply systems to sewage treatment plants in Stockholm has been estimated 3500 kg/a in 2013. Source: Ulf Mohlander/Miljöförvaltning 1992 and Sales department/Nibe; supporting information of Monitoring urban copper flows in Stockholm Sweden, Amneklev et.al. 2016. Other sources to sewage treatment plants have not been estimated in Amneklev study. Neither how much of this estimated share is assumed to originate from copper tubes which are covered by criteria 027 in Nordic Ecolabelling criteria for new buildings or renovations.
"A large part of the copper that reaches the treatment plants via wastewater ends up in the sludge. Unfortunately, the general positive trend for reduced levels of metals in the sludge does not apply to copper and zinc. One reason is that copper is largely built into the infrastructure and it is therefore not as easy to reduce the supply of copper as it is for other metals that should be reduced in the cycle."	A significant decrease in concentration of copper in sewage sludge took place already before 1991, and copper is safely under the limit value, red line in picture below. As an example, statistics from Henriksdal sewage treatment plant (STP):  Concentrations of copper in Swedish sewage sludges are and have always been on safe levels well under limit value 600 mg/l:  Copper and zinc in sludge from municipal sewage treatment plants 2000–2018. Median values for STP for 20 000–100 000 person equivalents. Source: Naturvårdsverket: Rening av Avloppsvatten i Sverige 2020 It is indeed well known that copper is captured in sewage sludge, and this can be considered as a good way for reintroducing copper to

	circulation by using it as fertilizer to agriculture or other green area building, not wasting a valuable resource even from diffuse emissions. It is safer and healthier than any other substance leaching out of water supply systems of any kind. Copper is by far the most thoroughly researched building material in the world by its health and environmental properties ECHA: Copper Voluntary Risk Assessment Reports. Copper is also added to agricultural fields as chemical supplement, manufactured on purpose for fertilizer use. Copper in sewage sludge replaces or complements the addition of chemical supplement.
"The Swedish Environmental Protection Agency states that the copper levels found in arable land do not show negative microbiological effects, but that the margin is small. Both the background content of copper and local factors varies across the country. To provide general protection against the effects of copper, it is therefore justified to have stricter requirements regarding copper for the return of sludge. The Swedish Environmental Protection Agency further states that the supply of copper must specifically be reduced for sludge to be recycled in a manner that is sustainable in the long term. This is important as increased recycling of phosphorus from sludge is desirable from a resource efficiency and recycling point of view. This is the primary reason why Nordic Ecolabelling wants to limit copper as a material in tap water pipes and as a roof and facade material."	The information presented by Nordic Ecolabelling from Swedish EPA is based on a 10-year-old report (NV 6580 2013), and science has proven thereafter that the precautionary principle to restrict copper on agricultural fields has been counterproductive. No threat that has been described in that EPA report has realized. No evidence of microbiological effects has been seen. No need has risen for stricter limit values for copper. On the contrary, according to Jordbruksverkets gödslingsråd 2021 long term trend requires growing attention to copper deficiency in agriculture which is an increasing problem in Sweden. In Jorbrukverket's fertilizing instructions higher amounts of copper are recommended than for sludge, from 500 to 1000 g/ha/year. The latest Government report about handling of sewage sludge in Sweden, Hållbar slamhantering SOU 2020:3 recognizes copper as essential nutrient and does not address any need to reduce copper in sludge nor in agriculture. Copper is an essential trace element in agriculture, not a limiting factor for spreading sewage sludge to agricultural fields. Limit for fertilizing with sludge containing copper in Sweden is 40 mg/kg in agricultural soil. Sources: SNFS 1994:2 - Konsoliderad Kungörelse med föreskrifter om skydd för miljön, särskilt marken, när avloppsslam används i jordbruket, SLU Jan Eriksson 2021, Tillståndet i svensk åkermark och gröda : data från 2011-2017 In Sweden there are 3,7 % of agricultural fields containing over 40 mg/kg copper, primarily around Stockholm and Uppsala. Source: SLU, Mark och grödoinventeringen Sludge can be used on all other fields in Sweden, which makes 96,3 % of agricultural fields. Swedish agricultural area is 2 600 000 hectares. 25 % of it, which makes 650 000 hectares has insufficiently copper in soil for farming plants to grow and has to be fertilized with copper. Source: SLU, Mark och grödoinventeringen On these 650 000 hectares which have insufficiently of copper, 500 000 tons of sewage sludge would be easily consumed according to Swedish regulation. in Sweden 200 000 tons of sewage sludge per year is produced. Table: Yara:

Län	Areal med Cu-behov, %	Län	Areal med Cu-behov, %
Blekinge	40	Norrbotten	30
Kronoberg	40	Skåne	25
Gotland	40	Örebro	20
Jönköping	40	Östergötland	5
Dalarna	40	Södermanland	5
Halland	30	Stockholm	5
Kalmar	30	Västmanland	5
Västra Götaland	30	Uppsala	5
Värmland	30	Jämtland	5
Västerbotten	30	Västernorrland	5

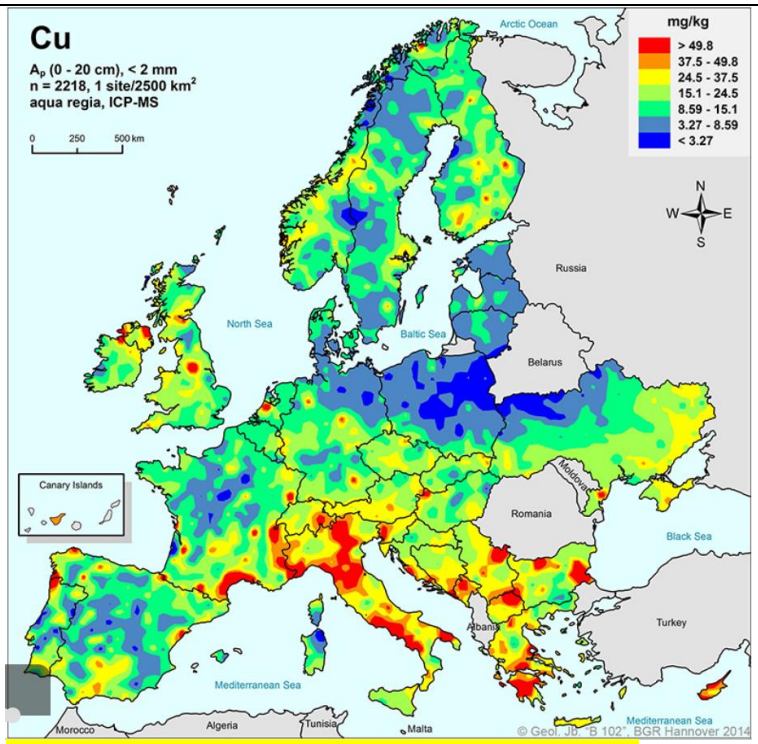
Det fattas ofta koppar i svenska åkerjordar. Tabellen visar hur stor del av arealen som ligger under gränsvärdet för kopparbrist, dvs lägre än 7 mg Cu/kg jord. (Källa: SLU, Mark- och grödoinventeringen.)

Counties which have insufficient copper in soil for growth, < 7 mg/kg DM

Percentage of copper-deficient areas in the county

"A study carried out by SYKES23 on behalf of the Finnish Ministry of Employment and Economic Affairs concludes that the negative effects of the supply of copper to the environment through sludge returned to agricultural land are not a

While red and orange colours on the map below indicate Swedish upper limit to spread sludge on agricultural fields and dark and light blue indicate too low levels of copper for agriculture, it is easy to see that Nordic Ecolabelling's worries about Sweden are exaggerated.

general Nordic problem. This is correct. However, the problem is not limited to the Stockholm area, which is incorrectly pointed out in the investigation. On the contrary, copper is a limiting factor for returning sludge to arable land in large parts of Sweden. Nordic Ecolabelling has concluded that it is not relevant to write geographically adapted requirements. Therefore, a general Nordic restriction requirement remains in the criteria.”	 Source: https://www.luke.fi/ruokafakta/sv/allman-information/jordmanskvaliteten/ Chemistry of Europe’s Agricultural Soils. Part A Data DVD Reimann, C., Birke, M., Demetriades, A., Filzmoser, P. & O’Connor, P. (eds.) Geol. Jb., B 102; © 2014, BGR, Hannover, Germany.