
Urban
Matters

Dirtiness in the Swedish sewage sludge debate

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The Swedish sewage sludge debate is probably rather unknown for most people, even those living in Sweden. Nevertheless, for those involved, it has been an infectious discussion stretched out for many years regarding the management of sewage sludge: the residue from wastewater treatment. After having studied the last 25 years of that debate through documents and interviews, I want to shed some light on power and the separation of humans from their excrement.

To do this, I synthesize my previously published research and not yet published material gathered through a research project on how sewage sludge became a usable good. The studies are based on stakeholders' – like water utilities providers, universities, farmers' organizations and NGOs – responses to Swedish policy proposals from 2002 to 2020 (Ekman Burgman & Wallsten, 2021), readings of steering board minutes from 2011–2022 of a Swedish certification for sewage sludge production (Ekman Burgman, 2026), interviews with experts involved in preparation for policymaking in 2019–2020 (Ekman Burgman, 2022), and interviews with entrepreneurs marketing sewage sludge in 2023, so far unpublished.

In this text, I focus on sewage sludge as an example of how a modernist order of separation between humans and their excrement is challenged by the introduction of human excrements as fertilizers in agriculture. This text is inspired by the argument that where there is order, there is power (Douglas, 2002). Hence, this text is also inspired by Mary Douglas's work on how anomalies threatening an order become dirt. For this text, I use Liboiron's (2021) distillation of Douglas's five techniques of maintaining order to keep waste in its place: labelling the anomaly as dangerous, as peculiar, physically controlling the anomaly, using it as an ambiguous symbol, and avoiding or hiding it. These techniques have been used throughout the debate for the last 25 years to handle sewage sludge dirtiness and keep it in place.

Separating humans from their excrement as an act of civilization

Before jumping into the more recent part of the debate, it is necessary to provide some background on the question of human-excrement relations. Crudely, and from a Euro-American centric view, it can be said that with modernization and the Victorian ideals of cleanliness, human excrements became a waste (Richardson, 2012). The removal of excrements was early on subject to public concerns and governing feces and urine became pivotal to uphold what was seen as civilized (Laporte, 2000). The workers associated with the management and utilization of the excrements were deemed dirty and had to work during the night to avoid attention (Ferguson, 2014). The extensive use of human excrements as fertilizers, observed in many countries, went from something advantageous to a sign of poverty and dirtiness with the introduction of synthetic fertilizers in Europe (Ferguson, 2014).

The human-excrement relation was thus built on separation, where excrements were dirty and potentially dangerous and should be kept away. In Sweden, excrements had become a threat, something which could pollute nations and draw them away from being civilized. Nordström (1938), a radio journalist, travelled across the country and labelled what he experienced as Dirty Sweden (Lort-Sverige). The removal of dirt was regarded as a necessity for a vital nation, which in Nordström's world included both access to proper toilets, but also the avoidance of Swedes having children with Finns. Even if he pointed to several subjects as dirt, human excrement was emphasized as something that should be clearly separated from humans. The radio programs and the following book were very

popular, and the latter was published in several editions. It spurred a debate to accelerate the welfare state to give everyone a decent living and access to sanitation.

In the 1960s and 1970s, the Swedish sewage systems were extended and the former workers managing latrines were gradually replaced by water and pipes (Blomkvist, 2023). However, getting human excrement out of sight did not mean that it disappeared. Sjöstrand (2014) writes that people complained about feces and urine being a nuisance along the shores in Stockholm. To solve the problem, sewage sludge was first shipped to international waters in the Baltic Sea. However, Finns living on the eastern shores of the Baltic complained. After that, the Stockholm solution for a few years during the 1960s was to fill empty returning cargo ships to dump the excrement around the Azores. This was abolished due to the high cost, and an intense debate arose about how to solve the problem. While a few suggested agricultural use, the majority in Stockholm's city council saw that as unthinkable and instead, incineration and landfilling were the proposed future solutions. Despite that decision, sewage sludge was used in agriculture and for landscaping purposes in city parks. At the end of the 1980s, 35 percent of sewage sludge was used in agriculture but varied, and in the 1990s this had sunk to 20 percent (SEPA, 2002).

Even if the example above is taken from Sweden, there are numerous cases from other parts of the world, like Sydney and Bombay (Hawkins, 2006) or Argentina and Canada (Öberg et al., 2014), where encounters between humans and their excrement have spurred resistance. The separation between humans and their excrement seems to be deeply infused into the notion of being civilized (Gerling, 2019; Oberg, 2019). Not to say that excrements do not have the potential of being dangerous to human and environmental health, but human excrement can be useful as a fertilizer, as it contains various nutrients and humic carbon (Malmqvist et al., 2006; Marchuk et al., 2023).

A ban on the potentially dangerous sewage sludge in agriculture

One technique to maintain the division between human excrement and humans is to label sewage sludge used in agriculture as dangerous (see Liboiron, 2021). In 1999, the Federation of Swedish Farmers advised its members to stop using sewage sludge. The farmers' cooperatively owned food industries simultaneously refused to buy crops fertilized with sewage sludge. The stated reason for the ban was the findings of flame retardants, i.e., a chemical hazard in the sludge (Bengtsson & Tillman, 2004). The ban was enforced and agricultural use dropped sharply to around five percent of the total amount of sewage sludge produced in 2002 (SCB, 2022). The government tried to raise limit values to increase farmers' demand, but many actors such as water utilities providers, public authorities, and environmental organizations were convinced that spreading sewage sludge in agriculture would not be a reliable future opportunity. Instead, to solve the problem of how to manage the excess, several of them suggested that money should be invested to develop a technology that could both extract the nutrients and ensure the safety of the product (Ekman Burgman & Wallsten, 2021).

The reaction to flame retardants in 1999 resembled earlier protests against sewage sludge use in agriculture referring to heavy metals, and preceded discussions on pharmaceuticals, microplastics, and PFAS (Ekman Burgman & Wallsten, 2021). Those substances related to human consumption, often a result of ingestion, evoked a feeling of danger and displacement. The responding technique to obtain the order was thus to ban agricultural use due to its potential danger.

A certificate to label the good sewage sludge

There were, however, some water utilities providers, farmers, and researchers who continued to encourage the use of sewage sludge in agriculture. To handle the potential disruption and maintain the separation between humans and their excrement, they established a certificate as a technique to label the used fractions as different (see Liboiron, 2021). Swedish Water, which organizes water and wastewater utilities, started a pilot project in 2001 in collaboration with the Federation of Swedish Farmers, the food industry, and food retailers (Carlsson, 2002). The project established a certificate for wastewater treatment plants to ensure the safety of the sewage sludge offered to farmers. This certificate imposed stricter rules than the national legislation and was sanctioned by the Federation of Swedish Farmers (Ekman Burgman, 2026). In that way, the certificate labelled a subset of sludge as a peculiar yet distinct type of excrement and could thus uphold the general order by creating an exemption.

The strictness of the rules was a matter of negotiation between the parties involved. The certificate's steering board spent several meetings arguing about whether diluted water from landfills could be tolerable, if cadmium limit values should be lower than those in European mineral fertilizers, or if money reimbursements to the farmers should be allowed among many other issues (Ekman Burgman, 2026). Nevertheless, they created a distinct category for a sewage sludge that was argued to be suitable for agricultural use. The rules were designed to become stricter and stricter over time, with the goal being a quality that consisted only of urine and feces (Ekman Burgman, 2026). The main activity imposed by the certificate upon the participating wastewater treatment plant was called upstream work, aiming to limit emissions of unwanted substances (Kirchmann et al., 2017).

The certified sludge was initially a small share of the sewage sludge produced. This certified sewage sludge was an exclusive label for something regarded as good, and the dirtiness was managed through the diversion of human activities like industries, landfills, and dentists' offices from the sewage systems. In that way, the connection between humans and their excrements could be enabled under these peculiar circumstances.

Incineration and extraction to control waste

While the use of sewage sludge in agriculture increased, companies and researchers simultaneously developed technologies to extract nutrients from sewage sludge. These new technologies would enable physical control of the sewage sludge, another technique used to uphold the threatened division of humans and their excrement (see Liboiron, 2021). The technological development had been funded and anticipated since the ban in 1999 by many actors like public research funders, the recycling industry, wastewater treatment operators, and research institutes (Ekman Burgman & Wallsten, 2021). The focus was mainly on phosphorus extraction, motivated by the fear of peak phosphorus, which led the EU to put it on the critical raw material list, considering it a prioritized matter for regional food security (European Commission, 2020).

The technologies aimed to separate nutrients from the potentially dangerous other substances in sewage sludge through incineration and chemical extraction. Thus, the extractive technologies could maintain the separation between humans and their excrement by producing something that resembled mineral fertilizers. While water had previously been introduced to clean away the dirtiness, fire was now proposed to control and purify the sewage sludge.

This would, however, impose costs on the public, who would need to pay for the production of pure phosphorus, as the proposed technology did not carry its own costs. Some actors like farmers' organizations and public authorities were concerned with this development and questioned the sole focus on phosphorus, and farmers demanded humus for their soils, deprived of this due to years of using mineral fertilizers (Ekman Burgman & Wallsten, 2021). Some also defended a reconnection between human food consumption and food production in a local eco-cycle, which was not satisfied through the extraction and production of a fertilizer that could be exported globally (Ekman Burgman & Wallsten, 2021).

Governmental ban and human excrement as an ambiguous symbol

The use of ambiguous symbols is another technique for maintaining the order of dirty sewage sludge. The Swedish government initiated an inquiry in 2018 to prepare a ban on sewage sludge in agriculture. The inquiry's terms of reference clearly stated that nutrients from human consumption belonged to agriculture, but that sewage sludge was overly polluted. At that time, there was a newly developed Swedish technology for extracting phosphorus from sewage sludge, ready to be deployed if governmental support was granted. The government, constituted by the Social Democrats and the Green Party, favored a change from land application of sewage sludge to phosphorus extraction (Skog et al., 2018). The Green Party also has close ties to one of Sweden's largest environmental organizations, which is reluctant toward the use of sewage sludge but in principle positive to the use of nutrients from human excrement, and they favored such an extractive technology to avoid potential harmful substances from entering the agricultural soil (SSNC, 2012).

The inquiry had an associated panel of experts, consisting of representatives from governmental authorities, industrial organizations, and environmental organizations (Ekman Burgman, 2022). One expert, supporting the use of extractive technologies, stated that source-separating toilet systems and dry closets should actually be seen as ideal, but later argued that the implementation of such infrastructures was not feasible (Ekman Burgman, 2022). Some of the interviewed experts proudly announced that they were collecting their own urine to fertilize their garden, an act breaking the order of separating humans from their excrement (Ekman Burgman, 2022). The spreading of sewage sludge in agriculture was even defended by the organization for organic farmers in Sweden – despite being a practice prohibited by EU law for organic agriculture – who argued that nutrients from human excrement belong in agriculture (Ekman Burgman & Wallsten, 2021). Using one's own excrement as fertilizer can thus be seen as a symbol both threatening the separation of humans from their excrement while at the same time enforcing it.

Avoiding nuisance as spreading becomes the norm

The fifth technique of dealing with threats to an established order is the use of taboos and making the anomalies invisible (see Liboiron, 2021). Even if the distinction between humans and human excrement has slowly been challenged in Sweden, handling the taboo is still important. The governmental attempt to prepare a ban failed as the inquiry committee suggested in 2020 that spreading should continuously be allowed. They even stated that sewage sludge ought to be used in agriculture rather than composted and used for other purposes like golf courts, parks, or top covering of landfills (Government Offices

of Sweden, 2020). The use of sewage sludge had also increased dramatically since the previous ban imposed in 1999, as 60 percent of the total amount of sewage sludge was used in agriculture in 2024 (SEPA, 2025). Even if the great majority of sewage sludge produced was used in agriculture, entrepreneurs working with marketing and distribution were still concerned with how to spread sewage sludge discreetly. This section is based on interviews done in 2023 with salespersons in a company assisting wastewater treatment plants to find users and distribute sewage sludge. According to these salespersons, it was important to carefully consider the time of day when spreading sewage sludge to avoid when neighbors were at home. Giving consideration to the wind direction also ensured that the smell was noticed by as few people as possible.

During an interview, one entrepreneur said that farmers who have used sewage sludge could pejoratively be named Shitty-Sven by their neighbors. Therefore, the salespersons actively engaged neighbors by calling them, informing them, and inviting them to meetings with cinnamon buns and coffee. Both to recruit new users, but also to avoid personal conflicts between farmers. One interviewee said he decided to spread sewage sludge in the vicinity of a fast food restaurant, which caused people to express their disgust in newspapers and on social media. The interviewee said that he should have placed a sign close to the restaurant stating that “we are fertilizing with your shit”, as he considered it fully normal. He also added that it is, however, more convenient to avoid those confrontations.

Despite the increased use of sewage sludge, the taboo remained and sewage sludge use was still a discreet activity. One interviewee frustratedly expressed that many of the larger food industries were still reluctant to buy crops that had been fertilized with sewage sludge. There were ways to circumvent this, for example, exporting crops and then directly importing them back, as the food industries’ rules only applied to domestic produce. This disclosed a paradox that the import of sewage sludge fertilized crops was accepted, indicating that the close contact with (domestic) human excrement was still a matter of concern.

A dirty sewage sludge and the separation of humans and excrement

I have argued that the use of sewage sludge in agriculture is taking the matter into a place from which it has been separated. The various techniques of labelling it as dangerous, as a certified peculiar exception, controlling it physically by burning it, making it an ambiguous symbol, or hiding its presence have been ways to uphold that order. However, they have not prevented the sewage sludge from becoming increasingly used.

But is sewage sludge synonymous with human excrement? Many in this study would argue that human excrement should replace extensive use of synthetically produced fertilizers to reduce the levels of active nutrients in the ecosystem and dependence on fossil raw materials. But they disagree on whether sewage sludge is equivalent to human excrement. Even if the introduction of the certification mentioned above led to the reduction of heavy metals in Swedish sewage sludge (Malmqvist et al., 2006), and other studies show how the use of sewage sludge increases the amount of microorganisms (Marchuk et al., 2023), there is also a fear that it might contain unknown substances which by themselves or in combination become dangerous.

Returning to Douglas’ (2002) dirt as a “matter out of place” and the techniques to avoid this from happening, the reluctance to use sewage sludge could be seen as the

consequence of subordinating nature to humans by distinguishing modern civilians from primitive people who are managing their own excrement and even using it in agriculture (Gerling, 2019; Laporte, 2000; Morales et al., 2014; Oberg, 2019). But, if humans are superior to the ecosystem, why would it be problematic to use excrement as fertilizer in agriculture? Animal manure can normally be used without controversy, even if it may also contain substances like PFAS, hormones, heavy metals and other substances of concern. I have seen, in the various studies synthesized in this text, that humans are not necessarily seen as becoming clean if they are separated from their excrement. Rather, it is through what they ingest, consume and produce that their excretions become polluted and potentially dangerous.

While the humans managing human excrement in the past were considered dirty, the delegation of their work to sewage infrastructures now requires farmers, wastewater workers, recycling companies, and salespersons to handle that dirtiness. They have, however, used the techniques presented by Douglas (2002) and Liboiron (2021), not necessarily to uphold that order but also to challenge it, as Liboiron suggests. Through that, they establish a new order where nutrients from excrement should be made usable to agriculture. Those questioning agricultural use are thus becoming anomalies in an economized relation between humans and their excrement. The economization of sewage sludge is also timely, evolving with issues of national food security in the wake of the COVID-19 pandemic, the Russian invasion of Ukraine, and the closure of the Hormuz Strait, where dependence on phosphate rocks and fossil gas is becoming a problem of preparedness. Whereas concerns of nutrient recovery in the previous Swedish debate were formulated around environmental sustainability and the naturalness of human excrement as fertilizers, the future might be colored by a militarized view of scarce resources as a threat to the nation (Ekman Burgman & Wallsten, 2021).

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