Our Ref: ABP-301908-18

An Bord Pleanála

Brendan Regan
Delvin Road
Gormanstown
Co. Meath

Date: 24th August 2018

Re: Greater Dublin Drainage Project consisting of a new wastewater treatment plant, sludge hub centre, orbital sewer, outfall pipeline and regional biosolids storage facility
Townlands of Clonshagh, Dubber and Newtown, County Fingal and Dublin City

Dear Sir

An Bord Pleanála has received your recent submission in relation to the above mentioned proposed development and will take it into consideration in its determination of the matter. A receipt for the fee lodged is enclosed.

The Board will revert to you in due course with regard to the matter.

Please be advised that copies of all submissions / observations received in relation to the application will be made available for public inspection at the offices of Dublin City Council and Fingal County Council and at the offices of An Bord Pleanála when they have been processed by the Board.

More detailed information in relation to strategic infrastructure development can be viewed on the Board's website: www.pleanala.ie.

If you have any queries in the meantime please contact the undersigned officer of the Board. Please quote the above mentioned An Bord Pleanála reference number in any correspondence or telephone contact with the Board.

Yours faithfully,

Kieran Somers
Executive Officer
Direct Line: 01-873 7107


| | | |
|---|---|---|
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64 Sráid Maoilbhríde
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Brendan Regan
Delvin Road,
Gormanston,
Co. Meath



16th August 2018

**The Secretary.**
**An Bord Pleanala.**
**64 Marlborough Street.**
**Dublin 1.**

RE: Planning Application Ref : 06F.PC 0152 (Greater Dublin Drainage Project)

Dear Sirs and Madams,

I wish to strongly object to the construction of the Regional Biosolids Storage Facility at Newtown, Dublin 11.
A building of this type is not required to store Biosolids when there is an option to incinerate this by-product of waste water treatment for energy, immediately and post production at the Covanta Incinerator at Poolbeg in Dublin and at the Indaver Ireland Incinerator at Carrenstown, Duleek, County Meath.

In the course of Irish Water's Public Consultation in November 2017 in connection with the construction of a proposed (at that time) Biosolids Storage Facility for the Greater Dublin Area; Indaver (Ireland) offered to take the Biosolids for Incineration. Obviously, Irish Water have decided not to take this offer on board.
Irish Water decided not to accept this offer, despite being made aware of increasing recommendations that Biosolids are incinerated instead of the spreading of Biosolids on farmland and forestry lands.

Biosolids are a highly toxic by product of waste water treatment and the continuation of spreading this material on farmland, presents serious health risks to the population, our water supply and the food chain.
Ireland is heavily dependent on our food exports and the potential to compromise that dependency by continuing to spread Biosolids on Farmland is a very real threat to our economy.
European countries more aware of the dangers inherent in Biosolids are switching to incineration for energy as a means of disposal.

Furthermore at the Irish water Public Consultation in the Autumn of 2017, Irish Water failed to inform and provide accurate Indicative drawings of the proposed Regional Biosolids Storage Facility, namely the omission of "Odour Discharge Flues."

I include for your consideration support documentation, outlining the toxins present in Biosolids and the dangers for Public Health and Safety and the Environment by continuing to Store and spread Biosolids on Farmland.
Also, included is copy of the Gormanston Community Association Ltd., (Company Limited by Guarantee); submission to the Irish Water Public Consultation in Autumn 2017.
The Public Submissions made to Irish Water at that time are not included with Irish Water's Planning Application, though they are summarised.

I request An Bord Pleanala to set up a Public Enquiry into this Project before any decision is finalised.

I include the An Bord Pleanala €50 Fee required with my objection.

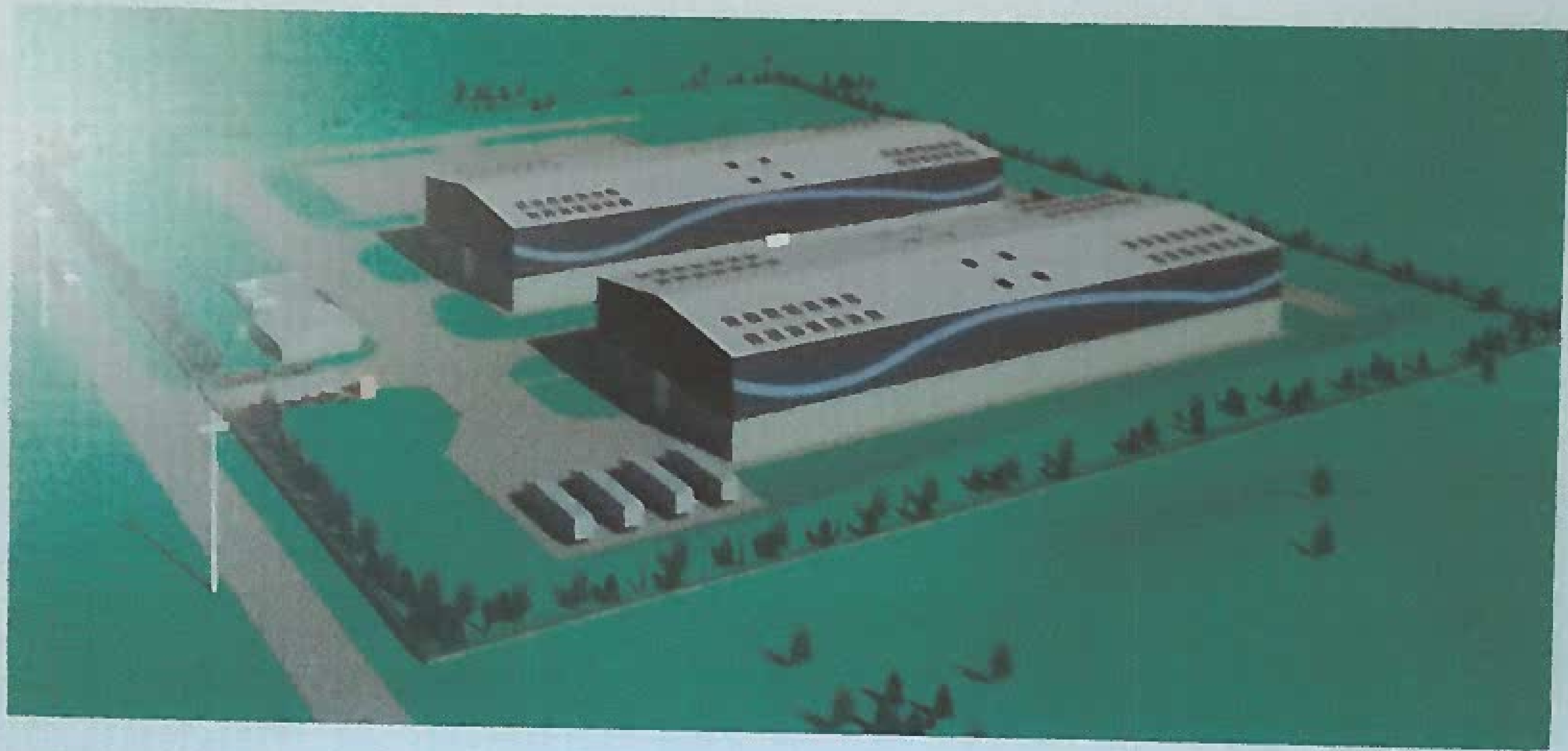
Yours Sincerely,

Brendan Regan
087 2556385
brendanregan@live.ie

# Regional Biosolids Storage Facility

Stage 2 Public Consultation

## RBSF Indicative Site Layout



ODOUR CONTROL DISCHARGE FLUES NOT SHOWN ON DRAWINGS AT PUBLIC CONSULTATION!

EXTRACT FROM GDA PLANNING APPLICATION.

| | |
|---|---|
| Proposed Regional Biosolids Storage Facility (RBSF) | • Located on an 11ha site at Newtown, Dublin 11.<br>• Demolition of existing single storey structures on site comprising of a security kiosk (approx. 22 sq.m gfa), the weighbridge kiosk (approx. 19 sq.m gfa), an ESB Sub-Station(approx. 16 sq.m gfa) and an administration building (approx. 85 sq.m gfa), together with the partial removal of existing internal roads and partial removal / diversion of existing drainage infrastructure as appropriate to accommodate the development.<br>• 2no. biosolids storage buildings, each approximately 50m wide, 105m long and 15m in height, including solar panels on the roof of one building. These buildings have a combined capacity to store up to 48,000 cubic metres of biosolids waste at any one time.<br>• 4no. odour control units, each with 18.2m high discharge flues<br>• Mechanical and electrical control building (approx. 35 sq.m gfa, 4 m high).<br>• Provision of a single storey site administration building for office, welfare facilities and meeting rooms (approx. 130 sq.m gfa) and associated staff car parking.<br>• Use of the existing vehicular access off the R135, including provision of new 2.7m high entrance gates to serve the Regional Biosolids Storage Facility.<br>• All ancillary landscape and site development works, including: Provision of 2no. new weighbridge facilities (1no. weighbridge on entry and exit of the Regional Biosolids Storage<br>• Facility).<br>• Provision of new ESB Sub-Station (approx. 40 sq.m gfa).<br>• Landscaping and boundary treatments, including new 2.7m high boundary to North Road/R135.<br>• Provision of fire protection holding tank (approx. 6.7m high).<br>• Provision of a HGV cleaning and set down area.<br>• Formation of new footpath and landscaped verge to R135 along site frontage.<br>• Provision of drainage, water, external lighting, and other utilities.<br>• Diversion of 450mm surface water pipe.<br>• 1no. signage structure, 5.2m in height erected on posts accommodating 2no. signage zones: 2.4m x 1.7 and 2.4m x 1.2m, located at the site entrance.<br><br>The Regional Biosolids Storage Facility will require a Certificate of Registration for the activity of storing biosolids (treated wastewater sludge) |

EPA (IRELAND) 2017.

# Research 200: Health and Water Quality Impacts Arising from Land Spreading of Biosolids

Authors: Mark G. Healy, Owen Fenton, Enda Cummins, Rachel Clarke, Dara Peyton, Ger Fleming, David Wall, Liam Morrison and Martin Cormican

**Published:** 2017 **ISBN:** 978-1-84095-698- **Pages:** 67 **Filesize:** 2,838KB **Format:** pdf

The aims of this study were to: (1) undertake a thorough literature review of the spreading of treated sewage sludge (biosolids) on land to include analysis of potential impacts on environmental and human health; (2) examine, under controlled conditions in the laboratory and field, the impact of the landspreading of biosolids (on grassland) on surface runoff/subsurface drainage/shallow groundwater of nutrients, solids, metals, pathogens and some specified emerging contaminants identified in the literature review, when spread based on N and P application rates; and (3) to model and conduct a risk assessment of potential hazards of human health concern.

## Identifying Risks

Implementation of European Union Directives in recent decades concerning the collection, treatment and discharge of wastewater, as well as technological advances in the upgrading and development of wastewater treatment plants, has resulted in an increase in the number of households connected to sewers and an increase in the production of sewage sludge (the by-product of wastewater treatment plants). Recycling to land is currently considered the most economical and beneficial way for municipal sewage sludge management. However, despite the many potential benefits of recycling municipal sewage sludge to land, there are many risks, which include the presence of emerging contaminants in the sewage sludge that may enter the food chain, and the potential for surface runoff of contaminants into receiving waters. This project found that although the application of biosolids poses no greater threat to surface water quality than the land application of dairy cattle slurry, there is a possibility that many non-priority elements and emerging contaminants, for which no legislation currently exists, may be applied to land without regulation, and may accumulate in the soils and enter the food chain.

## Informing Policy

Current legislation governing the land application of municipal sewage sludge to land considers certain priority pollutants and bio-essential elements. However, other emerging contaminants may be inadvertently applied to land. Regulations should be extended to cover non-priority elements, pharmaceuticals and personal care products (PPCPs). Non-priority elements are relatively inexpensive to measure, but PPCPs are prohibitively expensive as well as being continuously evolving. Wastewater treatment plants may be upgraded to include treatment of emerging contaminants, but the potential presence of known, as well as currently unknown parameters, raises concerns over the continued application of biosolids to land in Ireland.

# Environmental Protection Agency (Ireland)

## Rivers

" three yearly report on water quality 2013 - 2015"

Under the Water Framework Directive (WFD) one of the key elements for rivers is the diversity and number of pollution tolerant macroinvertebrate fauna present, which are monitored and assessed in Ireland using the Environmental Protection Agency (EPA) Q value method. The Water Quality in Ireland reports that are produced every three years have shown that despite minor variations in each monitoring period, overall levels of pollution remain relatively constant since the beginning of the 1990s. Some improvements have been made with the length of seriously polluted channel being reduced to just over 6km in the 2013 to 2015, period compared with 17km between 2010 and 2012 and 53km between 2007 and 2009.

While overall the length of unpolluted river channel has remained relatively constant there has been a substantial loss in the number of sites where the highest quality river sites are found (i.e. Q value of 5). In the most recent monitoring period (2013-2015) only 21 sites were classified as the highest quality rivers (0.7% of sites) compared with 575 between 1987 and 1990 and 82 between 2001 and 2003. This is an area where substantial effort is required to protect the few remaining highest quality rivers and return impacted ones, where feasible, back to their earlier extremely high quality.

# Sewage Sludge, Humanure and Biosolids

The Dangers of Sewage Sludge 


Sewage sludge (Biosolids or Humanure) is the residue left after the sewage treatment process is complete. It is often dried and either incinerated, taken to landfill or used as an agricultural fertiliser. However, it is not a safe material, as research has recently found. It contains waste from industry, laboratories, hospitals, funeral parlours, in fact, all waste that is flushed down sinks and drains wherever they are.

The dangers fall into 3 main categories:

- Hormones and Synthetic Hormones
- Prion Contamination
- Toxin Contamination

Hormones and Synthetic Hormone Contamination

In 2012, Scientists at the University of Aberdeen studying sheep maintained on pastures fertilized with sewage sludge (treated waste derived from human sewage processing plants, often called Humanure) found a high incidence of abnormalities in the animals. The abnormalities are being attributed to the presence of man-made hormones, particularly as those found in the contraceptive pill, in the treated waste.

They found that exposure to the chemicals in sewage sludge or 'Humanure' as it is called in the UK, affected the structure or function of testes, ovaries, uteri, parts of the brain, and thyroid and adrenal glands of sheep foetuses. In adult sheep changes in bone structure, the testes and offspring behavior were observed.

The researchers explained that man-made chemicals known to be endocrine disruptors, found in such things as electrical equipment, building materials, plastics, adhesives, paints and vehicle exhaust, have long been considered a health hazard. However the synthetic hormones found in contraceptive pills, known as progestins, which mimic progesterone, either alone or combined with estrogen, and excreted in human waste pose a greater problem because they are not removed or destroyed by sewage treatment and find their way into the food chain.

“These chemicals are in our air, soil and water. Some are fat soluble and may accumulate in our bodies while others are water soluble and end up passing through us and being flushed down our toilets, entering our environment where they may affect other animals or enter our food chain re-exposing humans,” said Dr Rhind at the British Science Festival 2012.

Professor Fowler added, "Many of the changes we see are very subtle and not apparent in the living animal; nevertheless, they may be associated with disruptions of many different physiological systems and increased incidences of diseases and reproductive deficiencies such as those that have been reported in a variety of species, including humans. Embryos, foetuses and young animals appear to be particularly vulnerable.

"It's notable that incidences of breast and testicular cancer and of fertility problems in humans are increasing, while populations of animal groups as diverse as amphibians and honey bees are in decline."

Research into the fertility of sheep exposed to endocrine disruptors in the environment by Dr. Michelle Bellingham of the University of Glasgow found that abnormalities that could result in low sperm counts were found in the testes of 42% of the animals, which led her to suggest that the rise in the use of in-vitro fertilization in humans, particularly as a result of low sperm counts, is due to exposure to these chemicals in the environment.

The Aberdeen researchers remarked that, "We are using our sewage sheep studies as a tool to investigate the impact on physiological systems of long-term exposure, to low concentrations of mixtures of chemicals because in the real world that is what happens."

"One solution to the problems that these chemicals pose," they point out, "might be to simply stop using them.

"So what we must do is attempt to identify the most critical disruptors and their impacts and we are beginning to do that in Aberdeen with our sewage sludge studies. We believe there should be a gradual reduction in the use of disruptors identified as being particularly problematic."

More ominously, the scientists warn that, "If we do nothing, endocrine disruptors may not only impact on human health but all the ecosystems including those on which we depend – if we compromise soil productivity and sustainability of our agricultural systems or cause imbalance in marine and freshwater ecosystems through damage to populations of top predators, ultimately, we threaten our own survival."

Prion Contamination

Typical wastewater treatment processes do not degrade prions. Prions are virtually indestructable rogue proteins that cause incurable brain infections such as Mad Cow disease and its human equivalent, variant Creutzfeldt-Jakob Disease, are difficult to inactivate, resisting extreme heat, chemical disinfectants, and irradiation. Until now, scientists did not know whether prions entering sewers and septic tanks from slaughterhouses, meatpacking facilities, or private game dressing, could survive and pass through conventional sewage treatment plants.

However, recent simulated wastewater treatment shows that prions can be recovered from wastewater sludge after 20 days, remaining in the "biosolids," a byproduct of sewage treatment sometimes used to fertilize farm fields.

Toxin Contamination

There are 27 heavy metals found in sewage sludge. None of the toxic organic chemicals it contains are regulated, or even monitored. Not even priority pollutants, including pesticides, pharmaceuticals, and plasticizers are regulated in sewage sludge. May of these poisons are accumulative.

Sewage sludge has been spread on land for far longer in the USA than here in the UK. By the late 1990s, reports of adverse health effects started showing up in local newspapers across the United States and Canada. Skin lesions often developed in people who contacted the material. Residents near land application sites reported burning eyes, burning lungs, and difficulty breathing when exposed to dusts blowing from treated fields. People who couldn't afford to move away developed chronic infections and permanent scarring of the lungs. Some died.

In the 1990's, a dairy farming family claimed that hundreds of their cows died after sludge from an Augusta wastewater treatment plant was spread on their land in a program promoted by the U.S. Department of Agriculture. They claimed that the sludge contained high levels of heavy metals and other dangerous pollutants. This was denied for years by the Authorities. However, in February 2008, U.S. Southern District of Georgia Judge Anthony Alaimo ruled in favor of the dairy farmers, a family named McElmurray, that maintained the sludge contained dangerous pollutants like chlordane and metals such as thallium and arsenic. Alaimo said sludge application records from the city of Augusta were accepted by the USDA and EPA even though they were "unreliable, incomplete and in some cases fudged," and that when the dairy farmers showed federal officials evidence their land was contaminated, the evidence was ignored. Alaimo also wrote in his February ruling that "senior EPA officials took extraordinary steps to quash scientific dissent and any questioning of the EPA's biosolids program."

In 2014, one in six children suffers from some form of neuro-developmental abnormality. The causes are mostly unknown. Some environmental chemicals are known to cause brain damage and many more are suspected of it, but few have been tested for such damage.

The brain's development is uniquely sensitive to toxic chemicals, and even small amounts may negatively impact our academic achievements, economic success, risk of delinquency, and quality of life. Chemicals such as lead, mercury, polychlorinated biphenyls (PCBs), arsenic, and certain solvents and pesticides pose an insidious threat to the development of the next generation's brains. All of these chemicals are present in Biosolids. When chemicals in the environment affect the development of a child's brain, he or she is at risk for cognitive deficits, learning disabilities, more serious mental retardation, ADHD, autism, cerebral palsy, and other disorders that will remain for a lifetime. Please view this video with Proffessor Philippe Grandjean, 2013

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It is our opinion that all spreading of sewage sludges, humanure and biosolids on agricultural land in the UK should be stopped until it is PROVED to be safe. The evidence that it is not at all safe is growing and that has been the opinion of WTE Ltd. from the beginning.

You will know if it is being spread on a field near you as it has a horrible, sickly sweet smell unlike any manure you have ever smelt. Stay away from it.


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# ORGANIC CONSUMERS ASSOCIATION

CAMPAIGNING FOR HEALTH, JUSTICE, SUSTAINABILITY, PEACE, AND DEMOCRACY

# Civilization & Sludge: Notes on the History of the Management of Human Excreta

Current World Leaders, Volume 39, No. 6
by Abby A. Rockefeller
Food Safety,
Toxic Sludge

People have been "civilized"--have been settled as opposed to nomadic or hunting-and-gathering--for a mere ten thousand years. And most of us Homo sapiens sapiens remained "uncivilized," in this narrowly meant sense of living without the advantages or constraints of a settled abode, for probably at least the first half of that ten thousand year period.

Before people became "citizens" living in "cities," these smartest alecks of the animal world deposited their excreta--their urine and feces--on the ground, here and there, widely dispersed, in the manner of all other land creatures. Of course, some groups, such as the cats, bury their feces and urine in shallow holes. But the effect of surface deposit or shallow burial is the same: ready access by the decomposer creatures in the soil to the nutrients and stored energy in the excreta; ready cycling through life of the elements necessary to it, attended by an incremental enrichment and diversification of the forms of life.

This meant keeping the nutrients characteristic of excreta in the cycle of soil-to-bacteria-to-plants-to-animals-to-soil. The soil and its communities of life long ago grabbed hold, so to speak, of this major source of nutrients. Keeping these nutrients--especially the major, or "macro," ones such as nitrogen and phosphorus--locked up in the cycles of the land, besides making the land-based life cycles nutrient-rich, kept them out of the waters of the Earth. The lakes, rivers, streams, ponds, oceans, and aquifers were consequently relatively nutrient-poor--what we call "pure." Aquatic life forms evolved in precise relation to such pure waters, so that the characteristic of macro-nutrient scarcity has become, gradually but absolutely, crucial to the health of the species and the ecosystems of the aquatic environment.

When we speak of "healthy" eco-systems, we mean stable eco-systems: that is, both tending toward diversity and not subject to cataclysmic drops in diversity. Such conditions, also called balanced, create relationships--ever more intricate relationships--that increasingly locate the inorganic elements necessary to life in cycles that make those inorganic elements increasingly available to life. The more extensive these relationships, the more consistently available the nutrient-elements will be to the life forms within those relationships. Expanding diversity of life forms is, relatively speaking, a low entropy enterprise. The more diverse the forms of life, the more matter and energy are kept available for use, or "work," and the less they are lost to use or work through either irretrievable dissipation or unresolvable mixing.

So, when we talk of "pure" water, we do not mean pure in the chemical sense. We mean, rather, a dynamic balance between the nonliving macro-nutrient-scarce matter and the living organisms in water; a balance whereby the relationships of life forms to one another, perhaps developed over the course of a couple of billions of years, are, though always changing, nevertheless (excepting cataclysmic events), always stable, expanding in diversity, and healthy.

It is not that life will disappear in waters suddenly enriched by an infusion of macro-nutrients. (Nitrogen and phosphorus, both called macro-nutrients because most plants need large quantities in order to grow, are also sometimes called "limiting factors" since, when they are scarce, the growth of plants--such as algae--not accustomed to nutrient-poor waters, is limited.) But the effect of sudden infusions of any of the macro-nutrients will be to reduce the diversity of life in any body of pure water. We call waters polluted that look like pea soup--so full are they with living algae--because we understand that even a very great abundance of a single form of life in, say, a lake doesn't mean that all's well with the life system in the waters of that lake.

And, indeed, all is not well--much is, in fact, dreadfully wrong--with most of the waters on Earth. What happened to make this so? In brief, there was a sudden infusion (sudden compared to the slow pace of evolution) of nutrients into the Earth's waters--in the form of water-borne human excreta. What follows touches on how water came to be used to transport human excreta, how bodies of water came to be used as the recipient dumps for the water-borne excreta, and what environmental effects have been associated with the chain of behavioral and technological developments resulting from these practices.

* * *

Much of the history of human behavior is before our eyes in living societies today, the history of our excretory practices not excepted. It is likely that all practices ever associated with the disposition of excreta continue in some societies still. The patterns of settled community behavior early split into two courses: one that unambiguously assumed there to be in human excreta a fertilizer value to agriculture, and one that did not regard it as having such a value or that was at least ambivalent about its value.

It was, to be sure, agriculture that "caused" civilization: in its simplest and in its most elaborate forms, civilization altogether depends on agriculture. This dependence, however, has not inspired all agricultural societies with reverence for the economy of the cycles on which agriculture is dependent. Especially uneven has been awareness of the economy of giving back to the soil in the form of excreta what has been taken out in the form of food. The cultures that did consistently employ their own manure in agriculture were primarily Asian. Much has been written about the longevity of these civilizations and the significance of the persistent use of human manure for that longevity (King 1927).

Those settled cultures that do not---and did not--connect human manure with sustainable agricultural productivity followed, and still follow, a fairly standard pattern of "development" of their "sanitation" habits. Urinating and defecating on the ground's surface in the manner of pre-civilized days, but in the immediate vicinity of their dwellings, is the first phase. This soon becomes unviable--that is, too unpleasant--due to the increasing density of the settlers, which leads to the creation of the community pit. When privacy of excretory functions comes to be deemed important, then comes the pit privy, the privacy structure on top of the hole in the ground.

This "outhouse," on account of the smell, is placed at a distance from the dwelling. The odor caused by concentrating excreta in one spot in the manner of the pit latrine--an olfactory offense that causes many to choose the bushes--is legendary for its unpleasantness. But stink aside, and contrary to what some people think, the pit latrine--with or without the privacy structure--is not, and never was, environmentally viable. The pit toilet causes two related troubles--waste and pollution: waste through loss of the unretrieved nutrients in the excreta and pollution of the ground waters by those same wasted nutrients. The pit privy is not, from an environmental point of view, anywhere near as damaging as the flush toilet, but the kind of damage it caused--and still causes--is of a piece with the kind caused by the string of technologies, flush toilet included, that evolved in response to the pit privy's inadequacies.

European societies were for centuries ambivalent in their attitude toward their own excreta. Was it a fertilizer source for agriculture or a nuisance to be "got rid of"? Before the advent of piped-in water, human excreta was deposited in cesspools (lined pits with some drainage of liquids) or vault privies (tight tanks from which there is no drainage) in the backyards of European towns. The "night soil"--human manure collected at night--was removed by "scavengers" and either taken to farms or dumped into streams and rivers or in "dumps" on the land. In Europe, there was, in other words, no consistent perception of the agricultural value of these materials: not as in Asian cultures, where the husbanding of human excreta was (until very recently) unexceptional and routinized.

Five hundred years before Christ, Rome already had in place a system both for bringing in pure water through its famous aqueducts and for the removal via sewers of fouled water that included water-borne excreta from public toilets and from water closets in the homes of the rich (Pliny the Elder 1991; Mumford 1961). But until the middle of the 19th century, most of Europe prohibited the use of sewers for the disposal of human excreta. Sewers consisting of open gutters or sometimes covered trenches in the center or sides of streets had long been in use in European cities, but only for the drainage of rain run-off and for city filth. However, householding transgressors used the sewers to dump their kitchen slop water, and--to save on the cost of paying scavengers--the contents of chamber pots and overflowing cesspools. And when going all the way to the farm was an inconvenience or an extra expense for professional cesspool scavengers, they too took surreptitious advantage of the sewers to dump the product of their nightly labors. The putrefying matter in these stagnant ditches moved along only when it rained enough (hence the name "storm" sewers), and digging them out with shovels was the job of the "sewermen" (Reid 1991).

The "water closet" (so-called to distinguish it from the "earth-closet," an early species of compost toilet much favored by 19th century environmentalists) afforded the enormous convenience of simultaneously putting the toilet in the house while getting the excreta out of the house. The so-named "flush" toilet had been known to the privileged at the height of the Roman era and since the 18th century in northern parts of Europe. But this pivotal technology, symbol of civilization still, came to widespread use only after piped-in water had been made available to the major cities in Europe and the United States. The first waterworks in the United States was installed in Philadelphia in 1802. By 1860 there were 136 systems in the U.S., and by 1880 the number was up to 598 (Tarr and Dupuy 1988). The convenience of a constant water supply stimulated the adoption of residential water fixtures--baths and kitchen sinks as well as flush toilets--dramatically increasing the per capita use of water on average from three to five gallons per person per day to 30 and even 100 gallons per person per day.

Of course, once water was in great quantities piped into homes, it had to be piped out again, and the first "logical" place to pipe it, including the flush water from water closets, was backyard cesspools. These cesspools, which hitherto had received the contents of chamber pots--urine and feces--only, now regularly overflowed with fecally polluted water, and a new level of horrendous odors and the spread of water-borne diseases was the immediate result.

Thus the system of cesspools and vault privies, which had been to some extent effective in avoiding pollution of waterways through their periodic cleanout by scavengers and the at least partial returning of human manure to farms, was overwhelmed by the pressure created by the new availability of running water. The next "natural" step in the solve-one-problem-at-a-time approach was to connect the cesspools to the sewers, thereby moving the sewage from overflowing cesspools into the open sewers of city streets. The result: epidemics of cholera. In 1832, 20,000 people died of cholera in Paris alone (Reid 1991). Wherever and whenever this combination of piped-in water, flush toilets, and open sewers has appeared in the world, epidemics of cholera have followed.

By the middle of the 19th century, the diseases spawned by the convenience of running water and the flush toilet gave rise to a demand for the construction of sewers that would carry the sewage not only out of and away from the home, but away from the city as well. This demand entailed the evolution of the ditch-type storm sewer into the closed-pipe water-carriage system of sewerage. The wastewater itself was in this system the medium of transportation, so a large and regular supply of water was a built-in requirement to keep the wastes moving in the pipes (Tarr and Dupuy 1988). (Today, efforts to conserve water by promoting the use of low-flush toilets--1.6 gallons vs. five to seven gallons--have led to plugging of sewers engineered for a minimum hydraulic flow of five gallons per flush. To deal with this problem, owners of these "water-conserving" toilets have been instructed to flush two or three times per use.)

The water-carriage system of sewerage introduced a new set of problems and, about these problems, a new set of debates among sanitary engineers in Europe and the United States. The engineers were divided again between those who believed in the value of human excreta to agriculture and those who did not. The believers argued in favor of "sewage farming," the practice of irrigating neighboring farms with municipal sewage. The second group, arguing that "running water purifies itself" (the more current slogan among sanitary engineers: "the solution to pollution is dilution"), argued for piping sewage into lakes, rivers, and oceans. In the United States, the engineers who argued for direct disposal into water had, by the turn of the 19th century, won this debate. By 1909, untold miles of rivers had been turned functionally into open sewers, and 25,000 miles of sewer pipes had been laid to take the sewage to those rivers (Tarr and Dupuy 1988).

In the cities with water-carriage sewers, cholera epidemics abated. However, in cities downstream from those dumping raw sewage into the river, death rates from typhoid soared. This led to the next debate: whether to treat the sewage before dumping it into the recipient bodies of water or whether to filter the drinking water downstream. Health authorities argued that sewage should be treated before disposal into any bodies of water, but the sanitary engineers preferred filtration by the next town down the river. The engineers prevailed, and indeed, in those cities with filtered water, deaths from typhoid then dropped dramatically (Tarr and Dupuy 1988).

The practice of "purifying" water polluted with sewage from upstream in order to make drinking water safe downstream, rather than treating sewage where it is produced, persisted until the middle of the 20th century. By then, the rate of industrial development had been enormous, and every industry wanted cheap disposal of its wastes. And since the public was paying, this was cheap as could be. Industries' demand for more sewering to serve their own disposal needs stimulated the industrialized nations of the world to allocate vast sums of money for massive sewer construction programs.

To the nutrient burden on recipient waters from human excrement, then, was added a new and ever increasing flow of industrial waste, much of it toxic. Wherever on the globe there were sewers, the recipient rivers, lakes, and streams were discovered to have become unacceptably filthy, and in response came pressure to treat the sewage before it entered those waters. And so began the "treatment" phase of the get-rid-of-it approach to dealing with wastewater now consisting of human excrement mingled with all industrial wastes transported by water.

The first step in the effort to clean up the sewage before sending the effluent into the river is termed "primary treatment." From the point of view of improving water quality, it is a crude method, consisting of little more than settling and screening the sewage to remove the largest and most aesthetically offensivg objects: all nutrients and chemicals not tied up in dead cats and intact feces remain in the water.

The next stage, called "secondary treatment," includes some biological stabilization through forced aeration of the sewage, and chemical flocculation and precipitation of some of the phosphates deriving from laundry detergents. But in spite of the great energy and financial cost of this form of treatment, the effluent reaching the recipient bodies of water continues to be rich in nitrates and phosphates. (These nutrients, as noted above, are called limiting factors. When they are present in water, they cause an explosive growth of algae, which in turn causes lakes to die of eutrophication as the decaying algae robs the water of its oxygen.) Industrial pollutants, such as toxic chemicals and heavy metals, are not addressed by this level of treatment.

So engineering ingenuity developed another, yet more complex, yet more energy intensive and expensive form called "tertiary" or "advanced wastewater treatment." Because of its enormous cost it has been difficult to get American taxpayers to fund this level to any great extent. But even where funded, treatment remains incomplete: some nitrates, some heavy metals, and many toxic chemicals continue to evade tertiary treatment and remain in the water.

Central collection and treatment of sewage cannot be said to have succeeded in solving the underlying problem of water pollution caused by using water to transport wastes. The problem is deeper and systemic. The trouble with the treatment approach to managing the pollution caused by water carriage of excreta and the by-products of industry lies only partly in the inadequacy of even the most advanced processes. Though the trouble may seem to have been ameliorated because this bay or that river is less polluted than it was without wastewater treatment, the pollutants that were in the water have simply been reorganized and concentrated in a new form: sludge.

Sludge is the dewatered, sticky black "cake" consisting of every waste material capable of being sent down the drains of homes and industries and into the sewers, and which the treatment process is able to get back out again. If sewage can be said perfectly to exemplify a high entropy process of matter lost through irretrievable dissipation, sludge is the quintessential example of disparate matter lost to use through unresolvable homogenization.

In the United States Federal Register (Vol. 55, No. 218/November 9, 1990), the United States Environmental Protection Agency (EPA) says of sludge: "The chemical composition and biological constituents of the sludge depend upon the composition of the wastewater entering the treatment facilities and the subsequent treatment processes. Typically, these constituents may include volatiles, organic solids, nutrients, disease-causing pathogenic organisms (e.g., bacteria, viruses, etc.), heavy metals and inorganic ions, and toxic organic chemicals from industrial wastes, household chemicals, and pesticides."

This short list of what sludge "may include" is shorthand for the enormous list of constituents that can actually be present in it. For instance, of the 100,000 or so organic and inorganic chemicals produced and used in industrialized nations, a huge number will end up in the sewers. One thousand new ones are produced every year and are added to the cocktail of synthetic substances affecting life processes. Those pollutants that are put in the sewers--and that are removed from the wastewater by the treatment process--will end up in the sludge. There are the heavy metals which, though they are micro-nutrients crucially needed in tiny amounts for growth of life, are toxic to life when they cross the threshold firmly established in the cells of life. There are organochlorine estrogen mimickers, the best known of which are DDT, chlordane, alpha-hexachlorocyclohexane, 2,4,D, PCBs, and dioxin. There are halogenated aliphatic (chain) hydrocarbons, aromatic (ring) hydrocarbons, chloro- and nitro-aromatic hydrocarbons, phthalates, halogenated ethers, and phenols. There is radioactive matter from hospitals. All of these are destructive of life processes (Reutergårdh 1966).

Attitudes toward sludge--this heterogeneous product of wastewater treatment processes--and toward the disposition of it have a convoluted history of their own. Clearly, sludge contains constituents that are hazardous to life. If we persist in producing sludge, something must be done with it. What to do with it is the subject of intense debate. To understand this debate, one must know something of the interplay between the following forces: the environmental movement that began in the early 1970s; the organic food movement that began decades earlier; the traditional sanitary engineering/regulatory posture; and the exigencies of the prevailing economic/industrial arrangement. The character of the debate taking place in the United States is illustrative of the way these forces interact regarding the technical and management patterns in all the sewered, and about-to-be-sewered, parts of the world.

To begin, it may be clarifying to focus this history on the question why decentralized solutions to water pollution were not developed and promoted over sewering, since, environmental considerations aside for the moment, they would have saved taxpayers immense amounts of money. The answer is in part the engineering/regulatory bias in favor of top-down, centrally controlled solutions. Health authorities are traditionally skeptical of the people's ability to manage problems themselves. The regulatory and sanitary engineering community (very much one body, in general) also feels that troubles are safer in its hands. Moreover, it is the case that there has been a widespread conviction on the part of environmental groups that treatment at the "end of the pipe" is the surest way of cleaning up polluted water. The environmental movement in the United States played a large part in creating the pressure that resulted in the Clean Water Act of 1977. This Act was effectively a sewering act. Enormous sums of money were allocated exclusively for the laying of sewer pipes and the construction of treatment plants. The Clean Water Act funded virtually no on-site, site specific, decentralized systems--either for remediation or for new construction.

But the greatest force behind the drive to sewer has been the interests of industry: first, because public sewers are the cheapest place for industries to put their wastes, and second, because it is the enormously expensive system of central collection that generates the highest profits for engineering and construction firms. For example, 80% of the total cost of sewering and treatment is in the laying of pipes, and engineering and construction firms get a flat 20% of the total project cost. Fixing the 5-10% of septic systems that are failing (i.e., polluting or overflowing) would never generate the profits associated with sewering 100% of these communities' central collection and treatment works.

This powerful coincidence of seemingly disparate interests--regulatory, environmental, and industrial--overwhelmed any popular opposition to the tax burden required to fund this massive public project, which in cost is second only to that of the U.S. highway construction program. When environmentalists are for it, and the governments are for it, corporate interests can just lay low, for who but a philistine would object to tax increases for so good a cause? Thus, town after town, each, as noted above, with typically 5-10% of on-site wastewater systems (mostly old cesspools and "modern" septic tank/leach fields) deemed to be failing, has been herded down the sewer path, and so has come to have 100% of its sewage centrally collected and treated. Since it is treatment of sewage that creates sludge--and since, therefore, the more extensive the treatment, the more and the worse the sludge--the issue of how to dispose of it became for municipalities a major and growing problem.

What was being done with it? In some places sludge was dumped in "sanitary" landfills, where it caused serious groundwater pollution. In other places it was incinerated, causing serious air pollution. And, remarkable as it may seem (given the stated objective of removing pollutants from the water), during the first phase of the sewage treatment era, cities built on ocean shores saw fit to dump the sludge into the ocean--that is, back into the water. As early as 1924, New York City, whose new treatment plant was a striking case in point, began dumping its sludge 12 miles outside New York Harbor. Sixty years later, the U.S. EPA determined that the coastal waters had been unacceptably damaged and ordered that the sludge be barged farther out--to a site 106 miles offshore. Although this strategy seems to suggest a failure of imagination, it remained an acceptable solution in the eyes of the federal authorities until the 1980s, when hypodermic needles and other medical debris from hospitals started washing up on the beaches. (These needles actually came from "solid waste," or trash, which was also routinely dumped into the ocean.) The barren moonscape on the ocean floor created by the unwonted concentrations of heavy metals and other toxins present in the sludge had been of little concern to the public (who couldn't see it and for the most part didn't know about it), but the AIDS epidemic and its attendant focus on hypodermic needles caused a public and media commotion sufficient to cause Congress to ban ocean dumping altogether in 1988.

This was a triumph for many environmental groups who had fought ocean dumping because of its toxic effects on marine ecosystems. But the ban on ocean dumping only moved the sludge problem to other grounds: what to do with it now? And, although not a conflict known to many--not even to many environmentalists--there was a disagreement within and between the groups in the environmental movement over what should be done with the sludge. It seemed that the old debate had reappeared, only this time about sludge: is it a nuisance--or worse, a hazard--that must be "disposed of"; or is it, like the old "night soil," a valuable fertilizer?

Some of the major environmental organizations--including the Environmental Defense Fund (EDF) and the National Resources Defense Council (NRDC)--struck a deal with the EPA, which agreed to shut down ocean dumping if they would join in promoting land application as the long-term solution to the disposition of sludge. Both EDF and NRDC were among the signers of the "consent decree," the legal document mandating land application in place of ocean dumping. To many in these organizations, this must have seemed a very good arrangement: in one fell swoop it ended a poisonous process (ocean dumping) and, it seemed, began a very good one. Wasn't this a promise to "recycle"? Wasn't it "sewage farming" at last?

* * *

The organic farming and natural food movement developed in response to the post-World War II period when agriculture was turning to chemical fertilizers and synthetic pesticides. By the 1970s the movement had attracted a diverse, passionate, and international following. Organic gardeners and farmers were "environmentalists" before the emergence of the more encompassing environmental movement in the 1970s. Fundamental to the organic movement's philosophy is the belief that human health depends on food grown on healthy soil--soil alive with humus, the partly decomposed residue of organic matter. Feeding the soil--rather than feeding the plants "intravenously" with soluble synthetic chemical fertilizers, as is the practice in agribusiness--is, according to this view, the way to support the health of the soil. And humus is the "food" for soil. Hence, compost, the managed creation of humus, is the essential ingredient of the organic method. Crucial to this orientation, also, has been the belief that, since all life is related, the pesticides, herbicides, and fungicides routinely employed in chemical agribusiness will damage human health at least as much as they will damage the smaller and rapidly multiplying creatures they were designed to destroy. It is logical to expect that using sludge in agriculture would be abhorrent to the organic movement.

The organic food and agriculture movement gained in strength in spite of the silent but monumental opposing interests of the agro-industry, whose economic health has depended on the petrochemical-based fertilizers and, given vertical integration of the chemical and agriculture industries, on pesticides of every sort. The organic food and agriculture movement also gained strength in spite of the ruling view of the EPA, which to a large extent is composed of engineers who have little respect for ideas associated with anything "organic." Indeed, the U.S. Department of Agriculture and the EPA regarded the practice of composting, the organic farmers' means of achieving soil health and fertility, as being unscientific--until, that is, the late 1980s when, soon after the signing of the consent decree stopping ocean dumping of sludge, "land application" of sewage sludge came into its own.

In 1992, the ocean dumping ban went into effect, and then, with the full fanfare and pomp of a formidable public relations campaign, sewage sludge was rechristened "beneficial biosolids." Thus the EPA's classification of sludge as a hazardous material was evaporated and then reconstituted with the trappings of the recently despised word "compost": sludge would be composted; the word "compost" would achieve official dignity. And environmental groups such as EDF and NRDC blessed this conversion.

At the same time, industry and the big environmental organizations were forging a new kind of relationship. These groups believed they could modify the behavior of industry for the sake of the environment by sitting at the same table in a spirit of negotiation. Industry on its part began to fund these organizations. EDF and NRDC both received funding from the waste handling industries, and subsequently were notably silent when questions were raised about the toxic constituents of sludge and the likely dangers of its application to the land. And within the organic movement,Compost Science, a spinoff of Rodale's very popular Organic Gardening and Farming magazine, became the prime publicist of land application of sludge, not only through its articles, but also through its copious advertisements for sludge hauling and sludge spreading equipment.

This sanction by the most respectable environmental organizations was key to getting public and regulatory acceptance for what would be for the waste industry the most profitable sludge disposal method among all the alternatives. Land filling is expensive for them because of tipping fees. Incineration is expensive because of unabated environmental opposition. Land application, on the other hand, is profitable. Municipalities pay waste haulers to take the sludge away and then dump it--for free (hence no tipping fees)--on farms. But beyond free dumping, through high-powered public relations expropriation of the words "natural" and "organic" and "compost," this same sludge, neatly pelletized and bagged, could be sold retail to gardeners. And, as long as there were environmentalists who condoned it, gardeners would buy it.

For every municipality with a sewer system and some kind of sewage treatment, the growing mounds of sludge are becoming an increasingly serious problem. This problem gives them a compelling interest to support land application: every town and city needs a way--a cheap way, if possible--to dispose of this sludge. The public, already burdened by taxes first for sewering and then for treatment of sewage, will not easily take on the further cost of the treatment of sludge. Land application isn't treatment: it's "beneficial reuse" that costs taxpayers nothing. Waste haulers began offering sludge as a "free fertilizer" to the farmers along with free spreading of lime, which was a bonus nf thousands of dollars to small and middle sized farms, in those parts of the country with acid soils in need of liming. This offer has made advocates of many of those farmers.

The claim that "biosolids" are beneficial is based on the presence in the sewage sludge of nutrients deriving from human excreta. But the benefit of this content compared to the dangers of the toxic matter in it is a key point in the debate about land application of sludge. It is the view of this writer that the menace of toxic and otherwise non-life-compatible substances that can be found in sludge so greatly outweigh the potential nutrient benefit as to make that potential benefit an irrelevance. Let me now present the reasoning on which my position is based.

Nitrogen is the main nutrient promoted to farmers as the "free fertilizer" in sludge. The land application wing of EPA (primarily the wastewater division) claims that the total nitrogen fertilizer requirement of agriculture can be met by using sewage sludge. However, most of the nitrogen in excreta derives from the urine, and the forms of nitrogen in urine are highly soluble and, once mixed with water, are not easily removed from it. Therefore, sewage treatment processes allow most of the nitrogen to remain in the wastewater, transferring correspondingly little to the sludge. Since the concentrations of nitrogen are so relatively low, and the concentrations of heavy metals (e.g., lead, cadmium, zinc, copper, mercury, chromium, and arsenic) are, relative to ambient levels in soils, so high, it follows that massive quantities of sludge must be spread on farmland to attain the levels of nitrogen needed to act as fertilizer. This means heavy metals will accumulate in the soil. Or they will move. Where? Into bacteria, into plants, into the chain of life.

The offers of free lime, besides serving as an inducement to farmers to accept sludge on their land, serves another purpose. The regulations governing land application of sludge require the maintenance of a pH above 6.5 in soils on which sludge is spread. This 6.5 pH is needed in order to bind up the heavy metals--precisely to prevent them from moving--either up, causing "bio-accumulation" in life chains, or down, causing pollution of groundwater. There is an active debate between soil scientists and advocates of land application about this effort to "bind up" the heavy metals. This debate has two questions: whether or not liming works on all the metals from a strictly chemical point of view, and whether or not it matters if it works, since the monitoring and enforcement of pH levels on farms is a virtual impossibility.

There are many problems surrounded by intense controversy over the issue of land application of sludge. Its noxious odor is the first to be complained of, if the least threatening to life. Disease--from viability and regrowth of human pathogens in raw sludge, and other diseases caused by the sludge composting processes--is of major concern to many. But, serious as these concerns are, serious as is the danger of heavy metals' toxicity due to land application, sludge has another yet more threatening characteristic. Far more dangerous to all life is the fact that combinations of some chemicals can cause levels of life process disruptions many times in excess of the effects of any chemical alone. For example, recent research has demonstrated dramatic increases in the estrogenic effects of common pesticides when they act in combination. Whereas the endocrine disrupting effect is 1:1 in the case of the doubling of one single compound, where two or more are combined, their destructive effects are not just doubled but, rather, multiplied and magnified to the order of 600 or even 1600 times. Sludge provides perfectly the conditions for combinations of thousands of chemicals to cause a cataclysmic devastation of life (Colborn et al. 1993; Arnold et al. 1996).

What is to be done with sludge, then? This question has two parts. The first is immediate: is there a safe way to deal with the sludge that the world is now producing? The second is a policy question: should we continue to commit resources to a sewering-and-treatment-of-sewage system which creates so unresolvable a problem as is embodied in sludge?

In answer to the immediate question, the sludge that is still being produced by existing treatment plants should be treated as the hazardous waste that it is. It should either be isolated in secure storage, as nuclear waste is, or it should be processed by means of emerging technologies such as gasification which, through high-heat oxidation, avoids the creation of dioxins in the stack gases and reduces the sludge to a mineral ash. Both these strategies have the advantage of making possible the minimizing of the contact of sludge with life, rather than the maximizing of it as is currently the case with land-application.

The answer to the second part--the policy part--is prevention. Prevention rather than inevitably futile attempts at "cure" is the form any positive change must take. Prevention in this case means not creating sludge in the first place. Communities that are not already sewered should practice sewer avoidance. Sewering is the most expensive technology. It degrades the environment more than protects it, and it unceasingly produces sludge in overwhelming quantities. Communities need to take the political initiative to insist that substandard or failing on-site systems (e.g., pit latrines, cesspools, septic tank/leach fields) must be remediated by on-site technologies that solve, instead of merely move the problem. Many options now exist for on-site remediation of failing or polluting septic systems. There are waterless composting toilets, greywater purification-by-use systems, and reed beds and other water-based biological systems for cleaning organically polluted wastewater from industrial processes. The key to preventing the trouble caused by this homogenized mess of mixed matter is separation at the source.

## Conclusion

No society in the world today deals well with human excreta. At all levels of technical sophistication, damage is done to water, soil, and human health--whether by the pit latrine, the flush toilet, the septic tank/leach field, or, most insidiously and destructively, by the central sewage collection and treatment plant, which creates an unpredictably toxic, and therefore unrecyclable, sludge. The only principle by which we can simultaneously protect the soil, the water, and human health is through technologies and management systems that systematically segregate human "wastes" and recycle them to agriculture, from which for the past 10,000 years, they have come.

The sheer number of dangers associated with treating sludge as if it were a fertilizer is so great, so various, and so serious that it would be the life work of thousands of professionals to divide up and respond to the categories of problems that will arise from this practice. The real significance of all this--of the names and numbers, of the long list of "anecdotes" about human illness, about cows and horses dying after eating hay grown on sludge and of people who live next to agricultural lands to which sludge has been applied developing strange illnesses--lies in the unknowability of it all: what goes down the drains is unpredictable; what goes into the sewer--from hour to hour, from week to week, from month to month--is unpredictable; what is extracted from the wastewater can neither be predicted nor monitored to an extent even remotely adequate. And no system of regulations can be either designed or enforced in such a way as to protect life chains from the potential of devastation by the constituents of sludge.

Collecting our "wastes" in sewage, then "treating" them so as to disentangle them again, then distributing the residue, the sludge, on agricultural land, can be made to look like "recycling," for some of the sludge did come from food growth and food use processes. But much of it did not come from such processes, and when those materials, foreign to the cycles of life, are insinuated into these cycles through the food chain, the consequences for life can be terrible. Because we cannot find a certain way either to keep all the toxics out of the sludge or to get all the toxics out of the sludge, we must say, I think, that the consequences of dumping sludge on agricultural land will be terrible.

To entertain the view that the benefits of application of sewage sludge to agriculture will outweigh the harm is either sentimental evasion or shortsighted greed. Uncertainty because of unpredictability is the unavoidable character of sewage sludge. And when uncertainty risks damage to all life of the order that industrial society's toxic chemicals certainly involve, gambling on the dangerous route is absurd.

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Conventional Farming Ruined the Soil on Our Farm—Here's How We Saved It
Avoid Food and Supplements with This Common Filler
How BPA and BPS Are Making People Sick
Monsanto and Bayer's Chemical Romance: Heroin, Nerve Gas and Agent Orange

## GORMANSTON (COUNTY MEATH) COMMUNITY ASSOCIATION

## SUBMISSION TO IRISH WATER ON PROPOSED REGIONAL BIOSOLIDS STORAGE FACILITY FOR GREATER DUBLIN

Dear Sir/Madam,
You have requested feedback along the following lines:

1. On the **approach to site selection**, as described in the *Stage 1 Report – Site Selection Methodology.*
2. The general **siting considerations and criteria** set out the Environmental, Economic, Planning and Social & Community factors that will be considered. Are there other criteria that should be included at this stage?
3. Are there any additional factors that should be taken into consideration in the **selection methodology** proposed by the project team?
4. How would you like Irish Water to communicate with you as the project progresses?

### <u>Our Observations Comments and Recommendations are as follows:</u>

- We as a community were surprised and alarmed to learn that biosolids arising in the Dublin region are spread in south Leinster and that this practice will continue. There is no mention of extending this practice to other areas of Ireland but we would be wary of a proliferation of areas for such treatment approved over and beyond the lifetime of this project.

- We would recommend that the Department of Agriculture, Department of the Marine, and the EPA conduct a full investigation into the current use of biosolids by Irish Water by reference to international standards, studies and research prior to the selection of any site. Thereafter the relevant agency should approve the manner in which biosolids are to be used and or disposed of.

- We would recommend that any area of archaeological, historical, tourism, or recreational value be excluded from consideration.

- **We recommend that the proposed Regional Biosolids Storage Facility for Greater Dublin is located on the site of the existing wastewater treatment plant for Dublin City.**

  **Reasons:-**

  1. Our Partners in the European Union are moving rapidly in the direction of Incineration for Energy of Biosolids - Incineration of Biosolids in the Netherlands is 95%, in Belgium 83% with other European countries following closely behind and increasingly using incineration to destroy Biosolids [(ref. Irish Water - National Wastewater Sludge Management Plan, Fig 8.1- Wastewater Sludge Outlets (2012)].

2. The **DTWE Dublin Waste To Energy (Covanta Incinerator)** adjacent to the Ringsend Wastewater Treatment Plant, is nearing completion and will be commissioned by year end 2017.

3. **"The Regional Biosolids Storage Facility for Greater Dublin"** - - Public Consultation advertisement in the Newspapers, does not state which Wastewater Treatment Plant(s) the Biosolids will come from, for storage at the proposed Storage Facility. Will the biosolids come from other wastewater treatment plants in the Leinster Area or further afield ?

4. If the biosolids come from other wastewater treatment plants in the Leinster Area or further afield, has the location on the Meath /Louth border of the **Indaver Carranstown Waste to Energy Incinerator** been considered.

5. The Irish Economy is heavily dependent on Agriculture and Horticulture. Ireland is not an Industrial Economy unlike other EU Countries. We pride ourselves as a clean country producing healthy food and dairy products - milk, butter, cheese, beef and grain for the home and overseas markets.
The spreading and use of wastewater sludge in biosolid form on farmland, horticultural land and in compost is detrimental to human and animal health, the environment - air, water and soil and has the potential to damage the Irish Economy.
Even Tertiary Wastewater Treatment will not remove all the Toxic Constituents of Sludge.
The continuing and increasing use of biosolids as a fertilizer in Ireland poses a greater danger to our heavily dependent on Agriculture Economy and is perceived by many as opting for the least costly method for disposing of Wastewater Toxic Sludge.
( There are hundreds of documents on the Internet relating to the constituents, treatment and impact of Wastewater Sludge on human health and the Environment)

- We would recommend that any area where there is any potential adverse impact on a sensitive fishery/marine environment, and/or where there is the potential for contamination of nearby river systems, wells and springs, be excluded from consideration.

- We would recommend that rural agricultural areas, where there is any potential for an adverse impact on crops, livestock, game and wildlife, be excluded from consideration. Special consideration should be given to any possibility of an adverse impact on nearby farmland of the proposed site and the consequences for the local and national food chain.

- We would recommend that any site selected should have an adequate road infrastructure in place capable of supporting and carrying the intended estimated numbers of vehicles accessing the proposed site. The entrance of the proposed site should be capable being safely accessed. No rural site should be selected which burdens the local community with heavy vehicular traffic and/or significantly escalates an already significant level of vehicular traffic.

Yours Sincerely,

Peter Brady.
Chairman
2nd March 2017
Gormanston Community Association Company Limited by Guarantee.
Delvin Road,
Gormanston,
County Meath.

Association Registered with Muintir na Tire.