Proposal for the Integration of Biosolids Beneficial Use in the Global G. A. P. (Good Agricultural Practices)

Submitted to the Global G. A. P. Technical Committee – Crops

Chairperson: Ian Harrison, IP Ltd./ASDA
Vice-Chairperson: Paul Bol, Groenten Fruit Huis
Board Liaison: Leon Mol/Ahold + Richard Schouten/Groenten Fruit Huis
GLOBAL G.A.P. Secretariat: Ignacio Antequera

September 26, 2018

The group of signatories to this proposal brings together and represents a wide variety of public utilities, municipalities, non-governmental organizations, and private companies specializing in the treatment and land application of biosolids – the treated solids (sludge) from wastewater treatment facilities. This group of organizations participates actively in discussions regarding the evolution of policies and regulations related to the management of biosolids, other soil amendments, and related environmental and agricultural topics at the state/provincial and national and federal levels. These organizations also carry out and/or support different types of studies to enhance the knowledge related to the impact of biosolids land application on agriculture, public health, and the environment.

Land application of biosolids is done to take advantage of their beneficial properties in terms of supplying crop nutrients and organic matter and improving soil properties. The benefits of biosolids are similar to those of animal manures but their use is more highly regulated. Land application of biosolids has been developed successfully throughout the world for more than 50 years. (See the UN Habitat Global Atlas of Excreta, Wastewater Sludge, and Biosolids Management, 2008: https://unhabitat.org/books/global-atlas-of-excreta-wastewater-sludge-and-biosolids-management/)

Land application of biosolids is now fully recognized as part of the Circular Economy, which is a concept rapidly growing in the EU, North America, and elsewhere. In the EU, recent initiatives have been launched to identify more easily the fertilizers coming from the Circular Economy, such as the development of the brand label "Sustainable Fertilizer" launched in France. As the U. K. Soil Association noted in 2010, and the European Sustainable Phosphorus Platform and the Sustainable Phosphorus Alliance in
North America have emphasized, recycling phosphorus from human and animal wastes is critical to sustainability and the Circular Economy, and biosolids are a key part of that recycling. And, in addition to phosphorus, biosolids contain numerous other plant nutrients and organic matter that should be recycled to soils as part of the Circular Economy. With a world population projected to be 9.8 billion people by 2050, there is a vital need to maximize crop production in order to feed them. Wastewater treatment will continue to expand throughout the world, providing an essential public service that was deemed the most significant medical advancement of the 20\textsuperscript{th} century by the \textit{British Medical Journal (BMJ)}. With advanced wastewater treatment, we will also see an increase in the production of biosolids, a vital resource high in phosphorus and other precious nutrients. Recycling biosolids to agricultural land integrates directly into the circular economy philosophy that is now part of the Global GAP standard. This proposal seeks recognition of the sustainability of biosolids recycling to soils. And it seeks to overcome unsubstantiated concerns.

The major positive impacts of beneficial use of biosolids include:

- Resource recovery (use of a local resource)
- Carbon sequestration
- Increase of soil organic matter and soil microbial activity
- Nutrient supply

These benefits are widely recognized by the hundreds of thousands of farmers who use biosolids or biosolids-derived products (such as compost) as one of the tools in their fertilizer and soil amendment tool box. They find value from biosolids, especially on land with significant shortage of organic matter.

Most recently, the sustainable use of biosolids is being supported by quality control systems that supplement extensive laws and regulations (e.g. the recent U. S. Food Safety Modernization Act, which supports the use of biosolids) and provide further confidence in the safety of the practice. For more than a decade, biosolids land application in the U. K. has been managed under a set of critical control points defined in the "Safe Sludge Matrix." In Europe, many of the companies that manage biosolids are certified under ISO 9001 (quality management system) and/or ISO 14001.
(environmental management system). In the U. S., the National Biosolids Partnership created the Environmental Management System (EMS) for biosolids, a certification program applied by the producers of ~12% of the biosolids land applied nationwide. It is based on ISO 14001 and involves independent, 3rd-party verification of quality biosolids management practices. And now, an ISO standard focusing on best practices regarding biosolids treatment and utilization will be published soon by ISO TC 275. Several of the signatories to this proposal are actively involved in the development of that ISO biosolids management standard, along with biosolids management experts and advisors from Canada, Australia, South America, Japan, the U.S., and other countries.

There is a large volume of scientific literature addressing the impacts of biosolids land application, some derived from long-term land application sites dating back 40+ years. Thousands of peer-reviewed research papers have measured the benefits of biosolids to soils and crops and evaluated the potential risks from trace contaminants (metals, chemicals) and pathogens in biosolids. The regulations of biosolids land application in higher- and middle-income countries around the world are grounded on this research, ensuring minimal risks to public health and the environment when regulations are followed. And there have been major scientific reviews of biosolids recycling policy and practice, including, for example, by the EU and the U. S. National Academy of Sciences.

However, as with most farm inputs, biosolids contain potential risks, including Potential Toxic Elements (PTE) such as heavy metals and other trace elements, organic chemical contaminants such as hormones and pharmaceuticals, and pathogens. When research has identified any significant risk from PTEs, regulations and best practices have been implemented to address them. Throughout higher- and middle-income countries where biosolids are widely used, the quality of biosolids has improved dramatically and continually over the past 30 years through the limitation of industrial discharges to sewer systems and the development of advanced treatments to destroy pathogens.

Risk assessments undertaken by independent research bodies – many at the national government level – have concluded that the controlled use of biosolids does not represent a risk for the environment and for public or animal health. This has been confirmed through experience: over the last 30 years, since the promulgation of the EU sludge regulations (1986) and the U.S. EPA 40 CFR Part 503 regulations (1993), there has been no sanitary crisis linked to biosolids land application.

Food industries and retailers have developed quality assurance programs to guarantee the quality of the products they deliver to the final consumer. The signatories to this current proposal support the importance of those programs and recognize that food
industries and retailers are increasingly interested in the global impact of agricultural practices on the environment, public health, and society. Such sustainability – Circular Economy – criteria are of growing importance in the establishment of production specifications and quality assurance programs. Therefore, this is an appropriate moment for Global G. A. P. to reconsider its position on the use of biosolids in food production.

The Global G. A. P. ban on land application of biosolids appears to be based less on technical, scientific arguments and more in relation to consumer perceptions. We understand this concern, as we biosolids producers and managers hear such concerns throughout our work. However, such public perceptions are becoming less prevalent, and biosolids recycling to soils is being embraced by widening audiences. For example:

- Tacoma, Washington, is becoming the city with the most community gardens per capita anywhere in the U. S. A. – and local biosolids soil amendments are fully integrated into this urban agriculture. Similar programs are growing and thriving in Seattle and Washington, D.C. Biosolids products, such as composts and heat-dried pellets, are widely used not only in agriculture, but in landscaping, horticulture, nurseries, and home gardens throughout North America.

- In the EU, Paris, London, and Madrid have developed for a long time successful land application programs of their biosolids and tillage land, whether after advanced digestion or composting.

The rates of recycling of wastewater solids (applied to soils as biosolids in accordance with regulations) is more than 75% in Australia, UK, France and Norway; more than 60% in Austria, New Zealand, Czech Republic, and the U. S. A.; and more than 30% in Canada and 50% for the EU overall. (These are just some of the countries that recycle biosolids to soils.)

The Global G. A. P. ban on land application of biosolids is equivalent to the promotion of landfilling and incineration of these materials. Most people and regulatory agencies prefer recycling over incineration and landfilling, which have a negative public perception and a less favorable environmental balance in comparison with land application. Note, however, that landfilling and incineration are important back-up options for those sludges (wastewater solids) that are not suitable for land application.

The signatories to this proposal urge Global G. A. P. to adopt the responsible position of integrating biosolids land application into food crop quality assurance programs, relying on national, state/provincial, and local regulations to guarantee their safe use as fertilizers and soil improvers and applying additional specific criteria to address
public perceptions and heighten quality assurance. This stance is in line with Global G. A. P. goals, the Circular Economy concept, and sustainable agricultural systems.

Specifically, we propose that the Global G. A. P. quality standard for biosolids includes the following four (4) criteria:

1. **Any use of biosolids by a producer involved in the Global G. A. P. program has to comply with applicable national, state/provincial, and local regulations.** Most countries where biosolids are applied to soils have mature science-based regulations. It would be cumbersome to detail and update regularly in the Global G. A. P. program all of these varied regulations and the changes they go through. And there is no need to duplicate the protective regulatory requirements. As its first line of ensuring the safety and integrity of crops grown with biosolids, Global G. A. P. can rely on national, state/provincial, and local regulations. For example, on any product sheet that accompanies any crop grown with biosolids, Global G. A. P. could require a certified statement that the biosolids delivered at the farm level comply with all applicable national, state/provincial, and local regulations and comply with additional Global G. A. P. standards, as discussed below.

2. **To further demonstrate increased protections and the value of Global G. A. P. certification, Global G. A. P. would require the use of biosolids that meet the highest quality standards,** thus reducing the variability that naturally exists in regulations from country to country.

The following numerical limits on PTEs would be required for any biosolids used on lands growing crops for Global G. A. P. certification (Table 1). These limit values are largely in accordance with the ones proposed for soil improvers in the latest draft of the EU fertilizer regulation. (The regulation is in final draft form, but these numerical standards are unlikely to be changed and have been widely endorsed). Indeed the undersigned organizations recognize that biosolids and biosolids-derived products have to compete with standard soil improvers anyway.

The following limits will mean some biosolids in use today will not be useable under these Global G. A. P. criteria, because they do not meet the strict standards below. For example, the pathogen limits below mean that U. S. A. Class B biosolids (which contain some pathogens) would not be allowed under the Global G. A. P. program.

**Table 1.** Maximum allowable levels of PTEs in biosolids acceptable for use under Global G. A. P.
The table below lists the maximum allowable contents of various compounds in biosolids, divided into two categories: Composted Biosolids and Other Forms of Biosolids.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Unit</th>
<th>Composted Biosolids</th>
<th>Other Forms of Biosolids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRACE ELEMENTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>mg/kg</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Chromium (total)</td>
<td>mg/kg</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Mercury</td>
<td>mg/kg</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Nickel</td>
<td>mg/kg</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/kg</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Arsenic</td>
<td>mg/kg</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/kg</td>
<td>450</td>
<td>900</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/kg</td>
<td>800</td>
<td>1600</td>
</tr>
<tr>
<td><strong>ORGANIC COMPOUNDS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAH 16</td>
<td>mg/kg</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>PATHOGENS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmonella</td>
<td>CFU</td>
<td>Absence in 25 g or 25 ml</td>
<td></td>
</tr>
<tr>
<td>E Coli or Enterococcae</td>
<td>CFU</td>
<td>1000 in 1 g or ml</td>
<td></td>
</tr>
<tr>
<td><strong>IMPURITIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macroscopic impurities (glass, metal, plastics &gt; 2 mm)</td>
<td>g/kg</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Note: The difference in the limits in PTE (trace elements + organic compounds) between composted biosolids and the other forms of biosolids is due to the fact that the latter are used as organic fertilizers at spreading rates which are about half of the ones for composted biosolids used as soil improvers.

In addition to the limitation of PTEs in biosolids, a limit could be set regarding the accumulation of trace elements and persistent organic chemical contaminants that are spread on land. For this parameter, the most appropriate approach is to dictate the total cumulative amount of certain persistent contaminants that are spread on the same land over a 10-year period (Table 2). This would be another significant requirement above and beyond regulatory requirements. (And remember that, in most countries with mature biosolids programs, regulatory requirements provide full protection of public health and the environment!).

**Table 2.** Maximum allowable average annual addition of PTEs to soils from biosolids over ten years.
<table>
<thead>
<tr>
<th>Compound</th>
<th>Unit</th>
<th>Average flow over 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRACE ELEMENTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>kg/ha/yr</td>
<td>0.15</td>
</tr>
<tr>
<td>Chromium (total)</td>
<td>kg/ha/yr</td>
<td>6</td>
</tr>
<tr>
<td>Mercury</td>
<td>kg/ha/yr</td>
<td>0.1</td>
</tr>
<tr>
<td>Nickel</td>
<td>kg/ha/yr</td>
<td>3</td>
</tr>
<tr>
<td>Lead</td>
<td>kg/ha/yr</td>
<td>15</td>
</tr>
<tr>
<td>Arsenic</td>
<td>kg/ha/yr</td>
<td>3</td>
</tr>
<tr>
<td>Copper</td>
<td>kg/ha/yr</td>
<td>12</td>
</tr>
<tr>
<td>Zinc</td>
<td>kg/ha/yr</td>
<td>30</td>
</tr>
<tr>
<td><strong>ORGANIC COMPOUNDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAH 16</td>
<td>kg/ha/yr</td>
<td>0.5</td>
</tr>
</tbody>
</table>

3. To provide further assurance that the production, management, and monitoring of biosolids land applications are undertaken properly, the producer and/or the supplier of biosolids to a farm under the Global G. A. P. program shall be certified to ISO 9001 and/or ISO 14001 and/or an equivalent quality certification program such as the U. S. National Biosolids Partnership EMS/BMP program (Gold or Platinum level) or the U.K. biosolids program quality certification system (currently under development) and/or be committed to and actively working on obtaining any of these certifications within two years, and/or be a biosolids provider accredited by Global G. A. P. (if Global G. A. P. wants to develop a program for certifying biosolids providers that is equivalent to one of the existing programs).
4. **Quality monitoring and traceability are also key points to enhance confidence** of third parties in biosolids land application. Under this proposed Global G. A. P. biosolids standard, the use of biosolids would be carried out with full traceability: records would be kept pertaining to the origin, quality, and quantity of land-applied biosolids on Global G. A. P. certified farms. The signatories to this proposal also recommend managing the production and the logistics of biosolids treatment and operations on a batch basis. There shall be at least one biosolids quality test per 2000 metric tons of final biosolids or biosolids-derived product; however, no more than 1 test shall be required per month – for a maximum of 12 tests, thus 12 batches, per year from any single biosolids production facility. A certificate of analysis for each batch, with indication of the batch reference, shall be given to the farmer or other landowner where biosolids are applied under the Global G. A. P. program.

5. **Communicating the benefits of biosolids use:** The environmental, economic, and social benefits of land application of biosolids need to be better understood by the variety of stakeholders involved in Global G. A. P. Therefore, Global G. A. P.-certified biosolids users will receive annually an environmental certificate summarizing the environmental and social benefits and the economic savings relating to natural resources consumption, reduction of green house gas (GHG) emissions on a carbon dioxide equivalence (CO₂e) basis, and the monetary value of the nutrients provided in the biosolids they use. The GHG reductions calculations will be based on the BEAModel, adopted by the Canadian Council of Ministers of the Environment (CCME); they are derived via both carbon sequestration and the avoidance of fossil fuel consumption for the production of mineral fertilizer. Each year, a compilation of these environmental certificates will be sent to Global G. A. P., so that Global G. A. P. as a whole can demonstrate this aspect of sustainability in its quality standard. In addition, in any jurisdiction where there is a distinctive trademark or identifier for fertilizers or soil amendments that are more sustainable or ecological, such as the “Fertilisant Durable” brand (see logo, above), the associated logo must appear on any documentation sent to biosolids users, such as the biosolids product sheet, the traceability records, and the environmental certificate.

**To summarize:** These five (5) proposed special Global G. A. P. requirements for the use of biosolids and biosolids-derived products on land where crops are grown under Global G. A. P. quality programs will provide large and significant further protections of soil and crop quality above and beyond current regulatory schemes and advance understanding of the role biosolids recycling plays in the Circular Economy. Such additional Global G. A. P. protections will ensure strong public confidence in the quality of crops grown with biosolids. Global G. A. P. will be able to argue strongly, from a comprehensive, scientific foundation, that it is advancing best agricultural practices, sustainability, and the Circular Economy by supporting recycling of organic matter and nutrients – especially phosphorus, recovery of other resources locally, and reduction of net carbon emissions.
Therefore,

We the undersigned representatives of biosolids recycling in countries around the world, in the interest of the Circular Economy, sustainability, and the public good, urge Global G. A. P. to remove its complete ban on biosolids use that appears, for example, in the Integrated Farm Assurance: All Farm Base – Crops Base – Fruit and Vegetables (at CB. 4.4.1) and other Global G. A. P. documents. We urge Global G. A. P. to include, instead, a statement restricting use of human excreta, sewage sludge, and/or biosolids unless produced, tested, managed, and applied to the land in accordance with the restrictions and requirements detailed above.

Signed,

Hubert Brunet  Horst Müller, Board Member
Greg Kester  Ned Beecher, Executive Director
Director of Renewable Resource Programs
About the core partners on this proposal:

**FRANCE**

Created in 1994, the Syndicat des Professionnels du Recyclage en Agriculture (SYPREA) brings together 7 companies in France that supervise the land application of more than 5.6 million m$^3$ of agro-industrial effluents, 2.5 million tonnes of biosolids, and 800 000 tonnes of compost. The main objectives of SYPREA are to professionalize and sustain the use of recycled organic fertiliser and soil improvers. In order to meet these objectives, SYPREA works in close collaboration with the various stakeholders in the recovery of organic waste at the national and European level. SYPREA is a founding member of the European Federation for Agricultural Recycling (EFAR).

The members of SYPREA are committed to permanently guaranteeing the quality of soils and crops. They...

- comply with the regulations governing land application of recycled organic products, including biosolids;
- regularly check by accredited laboratories all the biosolids spread on land as well as any raw materials entering their composting plants;
- ensure the traceability of biosolids and effluent from their production sites to land application sites;
- produce and compost biosolids compliant with the French standard NF U44-095;
- to ensure the health and safety of staff and third parties; and
- advise and properly inform users of biosolids and biosolids derived products such as composts.

**EUROPE**

Created in 2006, the European Federation for Agricultural Recycling (EFAR) brings together and represents European companies specialising in landspeeding of biosolids. EFAR participates actively in discussions regarding the evolution of regulations at the national and European level. EFAR also carries out different types of studies to enhance the knowledge on the impact of biosolids landspeeding on public health and on the environment.

The landspeeding of biosolids in agriculture must be undertaken with utmost professionalism. Indeed, it is necessary to guarantee soil and crop quality through the different steps of biosolids land application. Engineers and technicians of EFAR maintain a direct contact with farmers and biosolids producers. Their mission is to implement the landspeeding operations in accordance with the European and national regulation and
to optimise the beneficial use of biosolids. Communication is one of the key factors in the success of biosolids landspreading. Transparency with farmers, food producers, local authorities and consumers is critical to EFAR members. For more information: http://www.efar.be/

CALIFORNIA

For over 60 years, CASA has served as the leading voice for clean water agencies on regulatory, legislative and legal issues. We are the leading California association dedicated to advancing wastewater interests, including the recycling of wastewater into usable water, generation of renewable energy, biosolids and other valuable resources. Through our efforts, we help create a clean and sustainable environment for California.

CASA represents more than 90% of the population of California that is connected to centralized wastewater systems. In CASA members include more than 100 public agencies that engage in the collection, treatment or disposal of wastewater, resource recovery or water recycling.

NORTHEAST U. S. A. AND EASTERN CANADA

NEBRA is a non-governmental, non-profit association advancing the environmentally sound and publicly supported recycling of biosolids and other organic residuals in New England and New York in the United States and in eastern Canada. NEBRA membership includes the environmental professionals and organizations that produce, treat, test, consult on, and manage most of the region’s biosolids and other large volume recyclable organic residuals. Our members work with hundreds of farms throughout the region, as well as agricultural organizations and consultants, advancing sustainable agricultural practices. NEBRA is funded by membership fees, donations, and project grants. Its Board of Directors are from MA, ME, NH, VT, and Nova Scotia. For more information: http://www.nebiosolids.org

The organizations on the following pages also support this proposal, and additional organizations are reviewing it and are expected to sign on as well. A full list will be provided at the Technical Committee – Crops meeting on September 11, 2018.
Eileen O’Neill, Executive Director
Water Environment Federation
Alexandria, Virginia, USA

The Water Environment Federation (WEF) is a not-for-profit technical and educational organization of 34,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. The Residuals and Biosolids Committee (RBC), a technical committee of WEF, develops, recommends, and assists in conducting programs to provide information regarding management options, regulatory compliance and current practices for residuals and biosolids. We support scientifically sound and environmentally friendly regulatory practices and policies like Global G.A.P. while promoting cooperation between government agencies, associations, corporations and the public.
The Sustainable Phosphorus Alliance is pleased to support and sign the joint proposal to Global GAP.

Dr. James Elser, Director
Sustainable Phosphorus Alliance
1001 South McAllister Ave.
Tempe, AZ 85287-5701
signed 8/7/18
August 13, 2018

Re: Proposal for the Integration of Biosolids Beneficial Use in the Global G.A.P (Good Agriculture Practices)

To Whom it May Concern.

VVWRA is a nationally acclaimed treatment facility that treats wastewater for about 300,000 customers in the Victor Valley area of the Mojave Desert, while producing more than 5 million gallons of quality recycled water every day. In addition, VVWRA has an innovative and award winning waste-to-energy program that uses biogas (methane) produced at the plant to generate electricity. VVWRA has the goal to be energy neutral in the coming months.

Biosolids recycling to agricultural and other lands is a time proven practice that increases organic matter and improves soil health, increases crop production and yield, reduces the need to irrigate, sequesters carbon long-term in the soil, and reduces or eliminates the need to use fossil fuel based inorganic fertilizer. Biosolids recycling is also supported by the Statewide General Order No. 2004-0012-DWQ (GO) for land application issued by the State Water Boards along with a Programmatic Environmental Impact Report in 2004. Earlier this year Governor Brown introduced the Healthy Soils Initiative to ensure California soils will support production agriculture for future generations of Californians. The Initiative is being implemented by the California Department of Food and Agriculture. As the state works toward returning to 1990 levels of carbon dioxide equivalent emissions to mitigate climate change impacts, there is increased recognition of the importance of sequestering carbon in the soil and reduced dependence on fossil fuel. Furthermore, the state has adopted a legislative goal to recycle 75% of the solid waste generated in the state by 2020. Recycling of all biosolids help achieve these goals and are supported in policy and regulation across the state. Two national academies of science reports have supported the federal regulations for the land application of biosolids along with decades of research at universities across the globe.

Sincerely,

Logan Olds
General Manager
August 6, 2018

Global GAP (Good Agricultural Practices)

SUBJECT: Letter of Support - Proposal for the Integration of Biosolids Beneficial Use in the Global GAP

We are pleased to support the proposal for the Integration of Biosolids Beneficial Use in the Global GAP. The Orange County Sanitation District (OCSD) is a publicly owned wastewater treatment agency responsible for safely collecting, treating, recycling, and disposing of the wastewater generated by approximately 2.6 million people in central and northwest Orange County, California. OCSD has a 25-member governing board that is comprised of 20 City Council members, County Supervisor, representatives from two Sanitation Districts and two Water Districts servicing a 471-square mile area of the county.

With respects to biosolids, OCSD is committed to recycling biosolids in a manner that is safe, environmentally beneficial, and sensitive to the needs of the communities. OCSD currently produces 750 wet tons of nutrient rich biosolids per day of which 100% is beneficially used for direct land application or further processed into compost for agricultural, commercial, and residential uses, which support a sustainable biosolids management program.

As such, we encourage the adoption of the proposed criteria to be included to the Global GAP quality standard for biosolids. This would allow farmers that utilize OCSD's biosolids as a fertilizer or soil amendment to market their crops globally thereby further promoting a sustainable agriculture market and long-term biosolids management.

Thank you again, and should you have any questions, please contact me at (714) 593-7450 or by email jcolston@ocsd.com.

Sincerely

James E. Colston
Director of Environmental Services

H:\dept\es\es10\Letters-Memos

Our Mission: To protect public health and the environment by providing effective wastewater collection, treatment, and recycling.
Agency Description

The Sanitation Districts of Los Angeles County (Sanitation Districts) are a public agency that provides wastewater and solid waste services to approximately 5.6 million people in Los Angeles County, California.

Biosolids are produced at the Sanitation Districts’ wastewater treatment plants and then primarily used as a soil amendment for agricultural purposes. Most of the Sanitation Districts’ biosolids are processed at composting facilities then land applied to farmland, while a portion of the Sanitation Districts’ biosolids are directly land applied to farmland.

In addition, the Sanitation Districts own two state-of-the-art composting facilities and a 14,000-acre farm that utilizes biosolids compost. Compost produced from the Sanitation Districts’ composting facilities is part of the voluntary US Composting Council’s Seal of Testing Assurance program.

Ann Heil, PE  
Division Engineer, Reuse and Compliance Section  
County Sanitation Districts of Los Angeles County  
1955 Workman Mill Rd., Whittier, CA 90601, United States

Contact Person:  
Matthew Bao, PE  
Supervising Engineer, Reuse and Compliance Section  
(562) 908-4288 extension 2824; mbao@lacsd.org

SANITATION DISTRICTS OF LOS ANGELES COUNTY
Silicon Valley Clean Water (SVCW) is a Joint Powers Authority that operates a water resource recovery facility located in Redwood City, California. SVCW conveys and treats wastewater from the cities of Belmont, San Carlos, Redwood City, and West Bay Sanitary District.

By signing below, Silicon Valley Clean Water demonstrates support of the Biosolids Alliance Proposal for the Integration of Biosolids Beneficial Use in the Global G.A.P.

Teresa A. Herrera
Manager
Silicon Valley Clean Water
1400 Radio Road
Redwood City, CA 94065

Contact:
Kim Hackett
khackett@svcw.org
August 8, 2018

To the Global G.A.P. Technical Committee:

My name is Aaron Tartakovsky, co-founder and CEO of Epic CleanTec based in San Francisco.

Epic CleanTec is a San Francisco-based green technology startup that is redefining urban sanitation by decentralizing wastewater treatment into individual residential and commercial buildings. Epic’s patented onsite treatment approach uses a proprietary chemical oxidation process to convert wastewater solids into a high quality, sustainable, and endlessly renewable soil product (biosolid), all at the building scale. This carbon rich soil product can be used to grow crops, enhance gardens, and beautify green spaces.

I am writing to enthusiastically lend my organization’s support to the Proposal for the Integration of Biosolids Beneficial Use in the Global G.A.P. (Good Agricultural Practices) standard.

Sincerely,

______________________________
Aaron Tartakovsky
President and CEO
September 6, 2018

Ian Harrison
Chairperson, Technical Committee
GLOBALG.A.P. North America, Inc.
3519 NE 15th Ave. #521
Portland, OR 97212

Dear Mr. Harrison:

The San Francisco Public Utilities Commission (SFPUC) is a Department of the City and County of San Francisco and is comprised of three essential 24/7 service utilities: Water, Power, and Sewer. We are the third largest public utility in California, working in seven California counties with a combined annual operating budget of nearly $1 billion. The SFPUC operates and maintains the City's combined sewer system which collects and treats both sewage and stormwater. This system consists of 1,000 miles of pipes which collect sanitary sewage from homes, businesses, and stormwater runoff.

As part of these services, biosolids are recovered and used to improve agricultural soils. The biosolids produced by the SFPUC meet rigorous standards set by the United States Environmental Protection Agency and the State of California. Our agency is confident in the safety of our biosolids program and supports the proposal being submitted to the Global GAP regarding biosolids use.

If we can provide you with additional information or answer questions, please do not hesitate to contact Ravi Krishnaiah within our Wastewater Enterprise, at rkrishnaiah@sfwater.org. Thank you for your consideration on this important issue.

Sincerely,

[Signature]

Gregory J. Norby
Assistant General Manager
Wastewater Enterprise

OUR MISSION: To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.
GLOBALG.A.P. c/o
FoodPLUS GmbH
Spichernstr. 55
50672 Cologne, Germany

Attention: Crops Technical Advisory Committee

PROPOSAL FOR THE INTEGRATION OF BIOSOLIDS BENEFICIAL USE IN THE GLOBAL G.A.P.

The City of Los Angeles Bureau of Sanitation (LASAN) treats 320 million gallons of wastewater per day for more than 4 million residents. LASAN owns and operates four water reclamation plants that serve people within the City of Los Angeles and some contracted agencies within Los Angeles County including Burbank, Glendale, Beverly Hills, Culver City, Santa Monica, Marina Del Rey, and El Segundo. These plants effectively remove pollutants from the wastewater to produce recycled water protecting our river and marine environments, as well as public health. Through the wastewater treatment process, 272,000 wet tons of biosolids are produced on an annual basis. LASAN is committed to 100% beneficial reuse of biosolids generated. Of the total, the City managed 80% of its biosolids as a soil amendment or compost the remaining 20% was managed through deep well injection. LASAN has owned and managed a farm in California since 2000, where the majority of our biosolids are land applied in compliance with all local and Federal requirements. Many environmental benefits have been recognized in relation to these operations.

LASAN supports the Proposal For The Integration of Biosolids Beneficial Use In The Global G.A.P. and looks forward to future work in this area.

If you have any questions, please contact Mr. Hassan Rad, Regulatory Affairs Division Manager, at (213) 847-5186 or by email at hassan.rad@lacity.org.

Sincerely,

ENRIQUE C. ZALDIVAR, P.E.
Director and General Manager
LA Sanitation and Environment

zero waste • one water
AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER
September 12, 2018

Global G.A.P. Technical Committee – Crops (TC Crops)
Ian Harrison, Chair
Paul Bol, Vice-Chair
Leon Mol + Richard Schouten, Board Liaison
Ignacio Antequera, GlobalG.A.P. Secretariat
All Committee Members
c/o committees@globalgap.org

RE: Proposal for the Integration of Biosolids Beneficial Use in the Global G.A.P.

Dear Global G.A.P. TC Crops Members:

I support allowing biosolids use as part of the Global G.A.P. quality standard. It is important to base Global G.A.P. certification on science-based requirements. With certain criteria, it is possible for biosolids to meet the standards of other fertilizers and soil improvers that are allowed under the standard. Those criteria are outlined in an August 13, 2018 petition signed by numerous biosolids recycling representatives.

There are many positive impacts from the beneficial use of biosolids. These include resource recovery (use of a local resource), carbon sequestration, increased soil organic matter and microbial activity, and nutrient supply. These benefits are widely recognized by the hundreds of thousands of farmers who use biosolids or biosolids-derived products (such as compost) as a fertilizer and soil amendment. Biosolids use is supported by quality control systems and extensive laws and regulations that ensure safe application for people and the environment. As an important source of nutrients and organic matter, it is important that biosolids be evaluated scientifically for the properties they possess, not judged by perception around their source.

King County Washington’s Wastewater Treatment Division (WTD) operates three large regional wastewater treatment plants, two smaller treatment plants, and four combined sewer overflow wet weather treatment facilities. WTD serves about 1.7 million people within a 424-square-mile service area, which includes Seattle and most urban areas of the central Puget Sound region. Our mission is to protect public health and enhance the environment by collecting and treating wastewater while recycling valuable resources for the Puget Sound

Creating Resources from Wastewater
region. To do this, we treat an average of 179 million gallons of wastewater every day and produce nearly 29,000 dry tons of biosolids per year.

We support the petition and proposed criteria, and are excited to pursue science-based policy and standard changes that will allow biosolids to be considered fairly alongside other fertilizers and soil amendments.

Thank you in advance for considering amending the Global G.A.P. standards to allow biosolids under certain criteria.

Sincerely,

Rebecca Singer
Manager, Resource Recovery Section

cc: Christie True, Director, Department of Natural Resources and Parks (DNRP)
Mark Isaacson, Division Director, DNRP, Wastewater Treatment Division
Ned Beecher, Executive Director, North East Biosolids & Residuals Association
Maile Lono-Batura, Executive Director
maile.lono@nwbiosolids.org

Northwest Biosolids
Seattle, Washington USA

Northwest Biosolids works to advance wastewater management and environmental sustainability through the beneficial use of biosolids in the Pacific Northwest. Our member utilities manage biosolids for nearly eleven million residents and ratepayers across six states and provinces. Together, our membership continues to dedicate half of our annual budget to research biosolids end use options that include farmland applications. Including biosolids grown crops that adhere to set standards supports the overarching sustainability goals of Global Gap while also maximizing the available agricultural market open to working farms and consumers.
Sally Brown, PhD  
Research Professor  
School of Environmental and Forest Resources  
University of Washington  
Seattle, WA USA 98195  

Dr. Brown has researched the safety and efficacy of municipal biosolids for soils and crops for close to thirty years. She is a former member of the National Academy of Science Committee on Soils and was a member of the National Research Council Committee on the bioavailability of contaminants in soils and sediments. She is an author of numerous peer review publications as well as co-editor of two books on urban agriculture.
Name of the Organization: SYLVIS Environmental Services
Organization's Main Office: New Westminster, British Columbia, Canada

SYLVIS Environmental Services Inc. (SYLVIS) is an environmental consulting and contracting firm with the sole core focus of beneficial use and management of residuals. We are regarded as a leading international authority in residuals management, expanding our knowledge through research and operational programs for the beneficial use of residuals. We develop and implement innovative, cost effective, environmentally sustainable methodologies for the beneficial use of biosolids, water treatment residuals, ash, leachate, pulp and paper residuals, digestates, and other residuals.

Michael Van Ham
President, SYLVIS Environmental Services

Contact Person: Michael Van Ham
Contact Email: mvanham@sylvis.com
To: Crops Technical Committee, Global GAP

RE: Support for the removal of the complete ban on biosolids use in Global GAP documents.

The OK Ranch is a cow-calf operation in Canada which exports livestock to North American markets. The OK Ranch has used biosolids for grassland fertilization over the past 20 years, and adherence to the Global GAP program is not possible at the moment. I believe that adhering to the Global GAP standard would improve our ability to demonstrate good practices.

Signed,

[Signature]

Lawrence Joiner, President
OK Ranch, Clinton, BC, Canada

For information on this signature page please contact Lawrence Joiner at okranch@telus.net
Lystek International provides a patented, multiple benefit thermal hydrolysis (THP) solution for biosolids and organics management. The materials are processed into a high-nutrient, high-solids liquid Class A / Exceptional Quality (EQ) multi-purpose liquid fertilizer that is ideal for diverse agricultural markets. Similar end-product uses include digester enhancement to increase biogas yields and biological nutrient removal systems for wastewater treatment plant optimization.
August 31, 2018

RE: Support to the Proposal for the Integration of Biosolids Beneficial Use in the Global G. A. P. (Good Agricultural Practices)

The Water Environment Association of Ontario (WEAO) is an incorporated, not for-profit, technical association of approximately 1,300 environmental engineers, scientists, operators, and others from consulting companies, municipalities, industry, equipment suppliers and government agencies. It is affiliated to the Water Environment Federation (WEF) and a member of the Canadian Water and Wastewater Association (CWWA).

The WEAO’s Residuals and Biosolids (R&B) Committee develops, recommends, and assists in conducting programs to provide information regarding management options, regulatory compliance and current practices for residuals and biosolids. Biosolids are a nutrient-rich end-product of the municipal wastewater treatment process and have gone through a pathogen reduction process, as well as removal of other constituents depending on their chemical make-up. They contain nitrogen, phosphorus and organic matter as well as essential micro-nutrients which are important for plant growth and soil fertility and thus commonly applied to agricultural land. Recycling this valuable resource benefits both farmers and society in general. Farmers receive a substantial economic benefit because biosolids provide nitrogen, phosphorus and other micro-nutrients that they would otherwise have to purchase to grow their crops. Society benefits from this practice through reductions in landfill space requirements and greenhouse gas emissions. We therefore support scientifically sound and environmentally friendly regulatory practices and policies like Global G.A.P. while promoting cooperation between government agencies, associations, corporations and the public.

Erin Longworth, M.Eng., P.Eng., PMP
WEAO President

cc: R&B Committee
Richard Szigeti, Vice President
Heather Tyrrell, Chief Administrative Officer
August 30, 2018

Mr. Ian Harrison, Chairperson
Global G.A.P. Technical Committee – Crops

Re: Proposal for the Integration of Biosolids Beneficial Use in the Global G.A.P.
(Good Agricultural Practices)

The Ontario Soil and Crop Improvement Association (OSCIA) is pleased to submit this letter to the Global G.A.P. Technical Committee - Crops that supports the prudent use of organic amendments including municipal biosolids utilization, in crop fertility programs.

OSCIA, founded in 1939, is a unique not-for-profit grassroots farm organization. Our mission is to facilitate responsible economic management of soil, water, air and crops through development and communication of innovative farming practices. Our organization is comprised of more than 50 local associations around the province and a membership that represents all major sectors. OSCIA is farmers actively seeking, testing and adopting optimal farm production and stewardship practices. As a leader in agricultural stewardship program delivery, OSCIA works with producers to support environmental stewardship activities in agriculture through education-based programs and cost-share funding opportunities.

Our membership has long recognized that soil health is essential to satisfy economic, environmental and societal demands. Investigations into soil health is the number one research priority of OSCIA. Our organization collaborated alongside other farm organizations, agri-food businesses, academia, conservation organizations and governments on the working group that was instrumental in developing New Horizons: Ontario’s Agricultural Soil Health and Conservation Strategy, 2018. The strategy clearly identifies the application of organic amendments (within recommended parameters) such as manure, compost, digestate and other related amendments as a best practice to maintain and even build soil organic matter.

The strategy calls upon municipalities, government and other stakeholders to work together to make suitable organic materials more broadly and economically available to the farm community. Continued soil research is highlighted to broaden our understanding of how to influence and optimize the biological, physical and chemical properties of soil through careful use of organic amendments.

There have been many applied research studies conducted over recent years by local and regional OSCIA groups working alongside government and industry representatives to investigate the merits of different organic amendments on different field crops. Products are evaluated for nutrient availability, application method and timing, environmental risk (volatilization, leaching, runoff), and the best overall system to gain most value from the amendment.

We trust this demonstrates to your committee our confidence in supporting the prudent use of organic amendments including municipal biosolids utilization, in crop fertility programs.

Respectfully,

Peter McLaren, President
Beloeil, August 9, 2018

Subject: Letter of support

Dear Members of the Global G. A. P. Technical Committee – Crops,

On behalf of Viridis Environnement, its Board of Directors strongly recommends this proposal for utilization of "high quality" biosolids under Global G. A. P. programs.

Viridis is the largest Quebec company specializing in the recycling of nutrient-rich biosolids. Active in all of Quebec and Eastern Ontario, Viridis recycles some 500 000 tons of materials, which it redistributes to nearly 800 farmers who use them as fertilizer or soil amendments on their land. Farmers nourish and strengthen their soils with this nutrient-rich organic matter. Viridis offers its customers quality products that make it possible to safely and efficiently recycle them in compliance with federal, provincial and municipal regulations. Sixteen cooperatives of the huge agriculture network “La Coop” are now Viridis shareholders. Through this alliance, Viridis and the 11,000 farmers who are members of the La Coop Network are working together to build and maintain our social and circular economy.

Yours sincerely,

Renaud Lapierre, ing. L.L.L
President of the Board
CEO, Viridis environnement

Simon Naylor, agr., M.Sc.
Vice-president, Administration and Development, Viridis environnement and member of the Board

Sophie St-Louis, agr. M.Sc.
Director, Compliance and Process optimization, Viridis environnement

On behalf of the members of the Board:

Simon Baillargeon
Vice-president, Business Development, La Coop Fédérée

Gilles Blaquière
COO, La Coop Purdel

Michel Brosseau
Special Counsellor to the CEO, La Coop Fédérée

Dany Côté, agr.
COO, COOP Novago

Michel Delisle
General Manager, agricultural division, La Coop Unicoop

Olivier Gagnon, LL. B., M.B.A.
Director, Animal Productions (monogastrics) and retail, La Coop COMAX

André Langlois, agr.
COO, Novago

Gervais Laroche, CPA, CMA
COO, La Coop Vivaco

Michel St-Germain
Vice-president, Operations, Viridis environnement

Dominique Tremblay, BAA M.Sc.
General Manager, agricultural division, COOP Nutrinor
Memorandum

To: Global G.A.P. Technical Committee - Crops

From: Pam Elardo, P.E., Deputy Commissioner

Date: Tuesday August 7, 2018

Re: Proposal for Integration of Biosolids Beneficial Use

The New York City Department of Environmental Protection, Bureau of Wastewater Treatment operates 14 treatment facilities across the five boroughs of the City, serving 9 million people and treating 1.3 billion gallons of wastewater every day. We see our function in the community as resource recovery facilities, returning clean water to our local waterways and recovering energy and nutrients through the treatment process. As a very large generator of biosolids, approximately 1,400 wet US tons per day, we are enthusiastic supporters of the beneficial use of this resource. To make that reuse sustainable, agricultural and horticultural markets must utilize biosolids products as sources of nutrients. Integrating biosolids reuse into the Global G.A.P. standards is a valuable step towards realizing the circular economy, improving human resiliency, and combating climate change.

NYC DEP supports this integration as a signatory on the proposal to Global G.A.P.

For further information on NYC DEP’s biosolids program, please contact Jennifer McDonnell, Biosolids Program Manager at (jmcdonnell@dep.nyc.gov).

Sincerely,

Pam Elardo, P.E.
Bill Toffey, Executive Director

The Mid-Atlantic Biosolids Association is a trade organization with over 85 organizational members, reaching over 600 environmental professionals in our seven states region with technical information, training, and news on biosolids programs. Our mission is to bring the very best science and technology to bear on the recovery and reuse of biosolids. At the August 3, 2018, meeting of the Board of Trustees, MABA affirmed its support of the statement to Global G.A.P. and authorized its Executive Director to sign the transmittal letter.
To:
Global G.A.P
Technical Committee - Crops

Copenhagen, September 5th 2018

Letter of support

On behalf of the Danish Biomass Recycling Association we strongly recommend the proposal for utilization of high quality biosolids under Global G.A.P. programs.

Danish Biomass Recycling Association is an organization with more than 30 company members, both public and private owned, focusing on safe and simple recycling of organic resources to both agricultural and horticultural markets as a source of nutrients and soil improvements.

Integrating biosolids reuse into the Global G.A.P. standards is a valuable step towards realizing the circular economy, supporting sustainable food production and combating climate change.

For further information on Danish Biomass Recycling Association, please contact Julie Lykke Jacobsen, manager at +45 33394021 or juj@lf.dk
www.genanvendbiomasse.dk

Sune Aagot Sckerl, Chairman of the Board, Danish Biomass Recycling Association
M +45 23 72 12 66 | E saa@hededanmark.dk | www.genanvendbiomasse.dk
Brussels, 10th September 2018

EurEau is the European association of drinking water and waste water operators. We represent 32 national associations from 29 countries. European water operators provide more than 540,000 local jobs.

Our members are fully committed to the continuous supply of wholesome and clean water and its safe return into the water cycle.

With this letter, EurEau wishes to confirm its strong support for the Biosolids Alliance Proposal for the Integration of Biosolids Beneficial Use in the Global G.A.P.

Oliver Loebel
Secretary General
Organisation: Agrivert Ltd

Address: Chipping Norton, Oxfordshire, United Kingdom

Company: Involved in the processing and recycling of food waste, green waste and sewage sludge in the UK

Designated contact: Alexander Maddan – amaddan@agrivert.co.uk

Position: Chief Executive

Signed: [Signature]
I am writing this letter in my capacity as a Senior Lecturer in Soil Chemistry at Cranfield University, UK. Cranfield University is a solely postgraduate university in the UK which is very research intensive. My research expertise is summarized below:

Dr Sakrabani has more than 15 years of experience in determining nutrient dynamics in soils associated with application of organic amendments such as compost, manure, slurry, sewage sludge, biochar and digestates. His work explores the resource efficiency and reliability of organic amendments as alternative sources of fertilisers to reduce demand on inorganic fertilisers. His work explores the use of new approaches where prediction of nutrient release from organic amendments can be exploited in order to maximise resource efficiency and promote sustainable intensification of agriculture. As a chemist his expertise also lies in the fate and transport of heavy metals and micropollutants that may be present in organic amendments when applied to soils. He has a good track record being involved in projects on biosolids application to land in relation to its use as alternative phosphorus fertiliser. His recent work funded by Natural Environment Research Council (NERC) has resulted in the Phosphate Acceptance Map. He has published in over 40 peer reviewed journals and is currently the Associate Editor of Soil Use and Management. He is a member of the Nutrient Technical Expert Advisory Group, Livestock Environmental Assessment and Performance Partnership, Food and Agricultural Organisation, United Nations, Rome. He also sits within the Struvite, Biochar, Ash sub-group of the EU Commission Expert Group on Fertilisers. His work related to sanitation is linked to valorisation of faecal sludge into fertilisers in Madagascar, Kenya and Haiti. He is currently being considered to be part of the UN Global Partnership in Nutrient Management. He is a member of the Royal Society of Chemistry, British Society of Soil Science, International Fertiliser Society and the Soil Science Society of America.

My research profile can be obtained from Google Scholar: https://scholar.google.co.uk/citations?user=Xm7cj7MAAAAJ&hl=en but some key papers are listed below:


From my research I have found that sewage sludge application can be considered safe in agriculture if it is treated properly but careful monitoring using existing options such as the Biosolids Assurance Scheme needs to deployed to ensure long term effects. The ban by Global GAP in using sewage sludge needs to be reconsidered as it is a significant missed opportunity in agriculture especially in developing countries. Recent publication (Moya et al. 2018) being considered in Food Policy journal indicates that certification schemes supported by rigorous monitoring scheme can be successfully implemented to ensure valorisation of sewage sludge use in agriculture.

Ruben Sakrabani
Senior Lecturer in Soil Chemistry, Cranfield University, UK