- **Introduction** Information
  - Layne Baroldi – Director of Regulatory and Legislative Affairs – Synagro Technologies, Inc.
  - Peter Price – Technical Services Manager for PA – Synagro Technologies, Inc.

- **Synagro -** Since its founding in 1986, Synagro has played a vital role as one of the Country's preeminent providers of environmentally-safe and cost-effective biosolids management services. Headquartered in Baltimore, Synagro employs over 800 people in 34 states and serves more than 600 municipal and industrial water and wastewater facilities.

- **Land application of biosolids is safe environmentally sound practice as evidenced by documented peer reviewed scientific studies**

  - Biosolids are the nutrient-rich organic byproducts resulting from wastewater treatment.
  - Long-term studies have also shown that biosolids use:
    - Improves soil characteristics
    - Enriches agricultural soil with plant nutrients and vital organic matter
    - Increases crop yields
    - Reduces irrigation water demand
    - Reduces soil erosion and prevent pollution in streams and rivers by increasing vegetative growth quickly, which stabilizes the soil and prevents runoff
    - Helps fight climate change by reducing demand for fossil fuel-based fertilizers and increasing soil carbon stores. Reclaim strip-mined lands
    - Enriches forestland
    - Conserves landfill space
    - Provides economic benefits to farmers
  - Biosolids have been treated and tested and meet strict federal and state science-based standards for use as fertilizers and soil amendments.
  - The scientific process depends on critical peer review and debate. Modern biosolids recycling policy and practice rests on a body of scientific research, review, and debate that has been vigorously conducted for over 30 years.
  - A large proportion of government and university scientists working with biosolids have come to believe that biosolids recycling in accordance with current laws and best management practices represents "negligible risk".
  - The overwhelming scientific evidence and decades of practical experience in PA shows that the land application of biosolids is very beneficial for farmers and the environment.
  - The following are the **key documents** that provide an overview of the scientific basis for biosolids management, including biosolids application to soils. These documents, including U. S. EPA risk assessment and two reviews by expert panels of the National Research Council of the U. S. National Academies of Science, represent the scientific consensus on this topic.
    - **The Part 503 Regulations** - The U.S. Environmental Protection Agency (EPA) published regulations for biosolids at 40 CFR Part 503 in accordance with the Clean Water Act. Details about the 503 rule are available in A Plain English Guide to the EPA Part 503 Rule. The full risk assessment process that led to the final standards found in the 503 regulations can be accessed here: A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule.
    - **Use of Reclaimed Water and Sludge in Food Crop Production (1996) -** This is the first of two National Academy of Sciences expert panel reviews of the federal

biosolids Part 503 regulatory program. It concluded… that the use of biosolids in the production of crops for human consumption, when practiced in accordance with existing federal guidelines and regulations, present negligible risk to the consumer, to crop production, and to the environment." (National Research Council: The Use of Reclaimed Water and Sludge in Food Crop Production," National Academy of Sciences, 1996, p.13.)

- **Biosolids Applied to Land: Advancing Standards and Practices (2002) -** In 2000, EPA asked the National Academy of Sciences to "review information on the land application of sludge and evaluate the methods used by the U.S. EPA to assess risks from chemical pollutants and pathogens in biosolids. The NAS found that "There is no documented scientific evidence that the Part 503 rule has failed to protect public health. In September, 2002, Dr. Thomas Burke, Chair of the NAS panel that wrote the report, issued a statement clarifying the panel's findings, stating that "[C]urrently, there are no studies documenting adverse health effects from land application of biosolids, even though land application has been practiced for years."
- **In 2003, EPA responded to a petition that urged a moratorium on the use of biosolids on soils.** The petition cited several cases that they claimed indicated harm from biosolids. In its response, EPA refuted the claims of the petitioners, undermining their allegations with contrary evidence from each case they cited.
- **In the years since the 2002** National Academy study, research scientists and U. S. EPA have continued to evaluate the potential risks to human health and the environment. There continue to be no findings of significant harm from biosolids recycled in accordance with regulations and best practices. The potential risks being evaluated by that research - such as micro-constituents in biosolids - are very much smaller potential risks than those that were addressed in the early 1990s by the EPA risk assessment. Today, research and experience are fine-tuning the practices of biosolids recycling, which has become a mainstream way of managing the necessary byproducts of necessary wastewater treatment.

- **Research on biosolids continues**, now with a focus on the potential environmental and health impacts of daily household products and pharmaceuticals. When detected, these compounds are found in biosolids at concentrations several orders of magnitude lower than in those products themselves. Thus far research suggests that biosolids are not a significant exposure pathway to these compounds. Exposure to these chemicals is much greater through household use than through crops or soils.

- PA **Information**
  - The Cornell Waste Management Institute published a working paper entitled *The Case for Caution* in response to what it had determined as areas of weakness in the EPA 503 rules which regulates biosolids land application.
  - Under the 503 rule states may adopt their own regulations concerning land application as long as the requirements are more stringent that the 503 rule.
  - When the Pennsylvania 271 regulations were drafted the authors incorporated almost half of the concerns raised by Cornell into our current regulations.
  - In 2013, Synagro land applied approximately 200,000 tons of biosolids for over 30 PA municipal facilities (list) for an average cost of <$40/ton including trucking
  - There are over 700 active biosolids sites (farms/mine reclamation) in Pennsylvania. Land application on these sites account for a third of all biosolids produced in the state.
  - Currently the only readily available alternative outlet for this material is landfilling.

- Landfill costs in eastern PA range from $45-$75 (this is the tip fee without trucking).
- The daily amount of biosolids a landfill can accept can only be 10-15% of the total tonnage of incoming material. 15% is the absolute max. Anything greater that 15% will cause structural issues within the landfill (cannot compact sludge).

- **Farmers care about their land and depend on Biosolids (agriculture)**

  - The benefits of responsible and safe biosolids recycling are many.
  - According to EPA, about half of the biosolids generated in the United States is beneficially recycled by the Nation's farmers.
  - Biosolids provide farmers with about $100 per acre worth of organic fertilizer that includes many essential nutrients not typically found in chemical fertilizers.
  - Farmers use biosolids primarily to reduce their dependency on chemical fertilizers.
  - Farmers follow a nutrient management plan that is prepared by a certified nutrient management planner.
  - Excessive regulations make the use of biosolids more difficult and greatly reduce the benefit to farmers' soil and crops.
  - In some cases, the use of biosolids provides the difference between farm profitability (or at least breaking even) or not. If any business cannot return a profit, it fails. But when a farm fails, the land may wind up being cut up into subdivisions or paved over for parking lots for commercial or industrial facilities—a loss of green space that harms the environment and alters forever the character of PA's rural communities.
  - Agriculture is a large industry in PA. The industry has a significant economic impact of and provides numerous jobs in the Commonwealth. Every job in agriculture and forestry supports jobs elsewhere in the PA economy. When you hurt farming, you hurt the entire economy.

- **Other potential uses for biosolids (landfilling, incineration and alternative technologies)**

  - If the taxpayers of PA are forced to utilize landfills this is not the best environmental practice
  - Biosolids and other organic wastes take up valuable landfill space
  - Sewage cost are going through the roof in PA because of water infiltration, consent decrees etc. Restricting the ability of municipalities to land apply biosolids will add to the rates that people are paying with increased needless regulation.
  - Biosolids and other organic wastes disposed of in a landfill can quickly release methane to the atmosphere (before methane capture systems become operational); methane is a powerful greenhouse gas.
  - Landfilling of biosolids does not take advantage of the nutrients and soil-building qualities in biosolids/residuals.
  - IF pushed indicate that maybe a study should be done on how Pennsylvania can utilize more of this resource for mine reclamation. We could benefit from that study and have additional places to land apply at reclamation sites if we created some incentive etc.

- **Chesapeake Bay and Water Quality**

    - Biosolids is an environmentally and economically responsible alternative to mined phosphate rock.
    - All biosolids contain P and putting this P to use reduces the demand for mined phosphate rock, an energy-intensive and expensive product.
    - Biosolids-borne P is a source of P typically closer to farms that need P, and it is provided to the farmer at low or no cost, thus reducing farm costs.
    - Using biosolids as a fertilizer rather than disposing of it in a landfill will generally reduce the biosolids management costs for municipalities, save landfill space, and reduce the demand for more mined P, thus extending the availability of this critical natural resource.
    - Although biosolids have advantages over other sources of P, they must be managed responsibly to prevent impairment of surface waters.
    - It is important to note that although continuous biosolids application can result in an accumulation of soil P, the percent of "labile" (mobile) P in biosolids (24%) is significantly smaller than other amendments (55-70%), and therefore may be less likely to be environmentally available and significant compared with other fertilizers and soil amendments (Ajiboye et al., 2004).
    - More recent research indicates that the P in biosolids and other materials that is of concern with regards to potential water quality impacts is only that portion of P that is water soluble, known as water extractable P (WEP). The remaining P is adsorbed strongly enough that it is unlikely to run off or leach and affect surface waters. As noted above, some of this P may still be labile (i.e. it may be undergoing transformations from being bound in one compound to being bound in another more plant-available compound) (Chaney, 2013; Chaney and Codling, 2005; Codling et al., 2000), but it is unlikely to escape the soil system and impact water quality. While not completely understood, when biosolids are involved, the reduced availability of P is likely due to the high levels of P binding constituents – such as aluminum or iron – in the typical biosolids. This reduced availability of P in biosolids is now accounted for through P source coefficients used in P indices.