CITY OF MIRAMAR
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January 24, 2025

Honorable Commissioner Anthony Rodriguez, Chairman
Miami-Dade Board of County Commissioners
111 NW 1st Street, Suite 320
Miami, FL 33128

Re: Additional Facts, Data, Science, and Peer Reviewed Studies Documenting Environmental, Public Health, and Financial Concerns Associated with Waste-to Energy Technology

Dear Chairman Rodriguez:

On January 14, 2025, the U.S. Environmental Protection Agency ("U.S. EPA") released a report titled, "Draft Sewage Sludge Risk Assessment for Perfluorooctanoic Acid ('PFOA') and Perfluorooctane Sulfonic Acid ('PFOS')." PFOA and PFOS are just two of thousands of compounds in a large family of synthetic chemicals called per- and polyfluoroalkyl substances ("PFAS"). Sewage sludge, also referred to as biosolids, is widely recognized to be a significant source of PFAS that when applied to land as a soil conditioner or fertilizers moves to groundwater or nearby lakes or streams and can and is taken up into fish, plants, and livestock.[1] The application of biosolids to agricultural lands, together with the uncertainty, confusion, and lack of uniformity regarding how to manage endless volumes being generated at municipal wastewater treatment plants, is creating a public health crisis and public financial crisis of immense proportions that is yet to be fully understood.[2] One longstanding approach to managing such biosolids is

[1] U.S. EPA documents this connection extensively on its website, which contains multiple links to guidance documents, agency funded scientific studies, and partnership initiatives with sister federal agencies, non-government organizations, and other stakeholder. See https://www.epa.gov/biosolids/and-polyfluoroalkyl-substances-pfas-sewage-sludge.

[2] See U.S. Env't Prot. Ag., *Facilitation Issues for Addressing PFAS in Biosolids*, No. 820S24002 (2024), https://www.epa.gov/system/files/documents/2024-12/facilitation-issues-pfas-biosolids.pdf.; see also Sarah Grace Hughes, *PFAS in Biosolids: A Review of State Efforts & Opportunities for Action*, Sarah Grace Hughes, Env't Council of the States (2023), https://www.ecos.org/wp-content/uploads/2023/01/PFAS-in-Biosolids-A-Review-of-State-Efforts-and-Opportunities-for-Action.pdf

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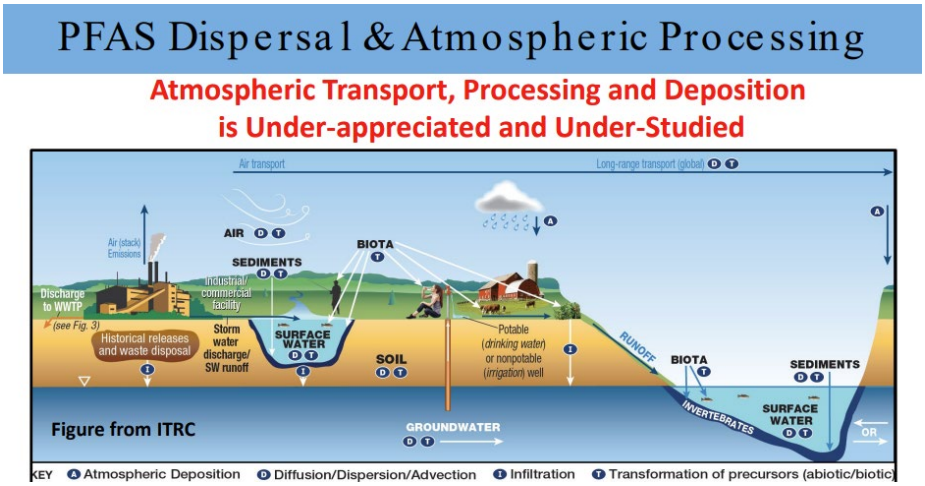
incineration, which of course has direct implications for the upcoming vote before you and your fellow Commissioners on siting a replacement Waste to Energy facility and why I am writing to you today.

U.S. EPA's Draft Sewage Sludge Risk Assessment for PFOA and PFOS, enclosed as Exhibit A,[3] "provides a qualitative description of the potential risk to communities living near a sewage sludge incinerator (SSI) . . . but does not provide quantitative risk estimates due to *significant data gaps related to the extent to which incineration in an SSI destroys PFOA and PFOS and the health effects of exposure to products of incomplete combustion* [emphasis added]." We bring this document, and U.S. EPA's findings, to your attention for two purposes: First, the public health implications related to incinerators as they relate to converting PFAS from a waste material to ambient air to rainwater[4] to plant, animal, and human receptors is acute, very real, and well supported in peer reviewed technical and scientific studies.[5] Approving an

[3] A summary of the Draft Sewage Sludge Risk Assessment, released by U.S. EPA as a companion Fact Sheet, is enclosed as Exhibit B.

[4] Maria Guerra de Navarro, et al., *It's raining PFAS in South Florida: Occurrence of per- and polyfluoroalkyl substances (PFAS) in wet atmospheric deposition from Miami-Dade, South Florida*, 15 Atmospheric Pollution Rsch. 102302 (2024) ("Atmospheric deposition plays a crucial role in the fate and transport of per and polyfluoroalkyl substances (PFAS), especially in areas far from production sites."); Samantha Olney, et al., *Influence of convective and stratiform precipitation types on per- and polyfluoroalkyl substance concentrations in rain*, 890 Sci. of the Total Env't 164051 (2023) ("Atmospheric transport and wet deposition have contributed to the worldwide distribution of per- and polyfluoroalkyl substances (PFAS) in terrestrial and aquatic ecosystems, even in remote areas far from known industrial sources."); David Pfotenhauer, et al., *PFAS concentrations and deposition in precipitation: An intensive 5-month study at National Atmospheric Deposition Program – National trends sites (NADP-NTN) across Wisconsin, USA*, 291 Atmospheric Env't 119368 (2022) (" . . . atmospheric deposition of PFAS can represent the major source of PFAS to both aquatic and terrestrial ecosystems and therefore of great concern to ground-and surface-water drinking water resources."); Kyndal A. Pike, et al., *Correlation Analysis of Perfluoroalkyl Substances in Regional U.S. Precipitation Events*, 190 Water Rsch. 116685 (2021). ("As local sources were determined to be significant, the results imply that local action can have an impact on PFAS contamination in precipitation.").

[5] The figure below, from a 16 January 2020 presentation on PFAS Deposition in Precipitation by the University of Wisconsin-Madison School of Medicine & Public Health, depicts how environmental media and aquatic organisms are impacted by PFAS in incinerator emissions.



See also Hyeong-Moo Shin, *Environmental Fate and Transport Modeling for Perfluorooctanoic Acid Emitted from the Washington Works Facility in West Virginia*, 45 Envtl. Sci. Tech. 1435, 1439 (2011) (highlighting their "linked air-soil-river-groundwater model").

incinerator technology that science will likely soon authoritatively confirm exposes so many[6] individuals to a known carcinogens, [7] endocrine disrupters, and many other illness factors,[8] is a course of action that

[6] Potential impacts to human health are not necessarily limited to close distances. Some of the pollutants created from waste incineration – such as sulfur dioxide and nitrogen oxides – can travel up to hundreds of miles. See U.S. EPA, What is Interstate Air Pollution Transport? (Feb. 17, 2023). Second, some studies have shown high odds ratios for soft tissue sarcoma and dioxin exposure for local residents living within 2-4 kilometers (km) of waste incinerators (i.e., about 1.2-2.4 miles). See, e.g., Peter W. Tait, et al., *The health impacts of waste incineration: a systematic review*, 44 Australian & New Zealand J. of Pub. Health 40-48 (Feb. 2020); see also Jean-Francois Viel, et al., *Soft-Tissue Sarcoma and Non-Hodgkin's Lymphoma Clusters around a Municipal Solid Waste Incinerator with High Dioxin Emission Levels*, 152 Am. J. of Epidemiology 13-19 (Jul. 2000). Other studies have found increased risk of congenital abnormalities in fetuses as far as 10 km away from waste incinerators (about 6 miles). See Giovanni Vinti, et al., *Municipal Solid Waste Management and Adverse Health Outcomes: A Systematic Review*, 18 Int'l J. Env't Res. Pub. Health 4331-4357 (Apr. 2021).

[7] Exposure to PFAS increases the risk to multiple types of cancer. Jie Zheng, et al., *Per- and polyfluoroalkyl substances (PFAS) and cancer: Detection methodologies, epidemiological insights, potential carcinogenic mechanisms, and future perspectives*, 953 Sci. of the Total Env't 176158 (2024). The following figure from the Zheng study identifies the types of cancers that are currently linked to PFAS exposure.

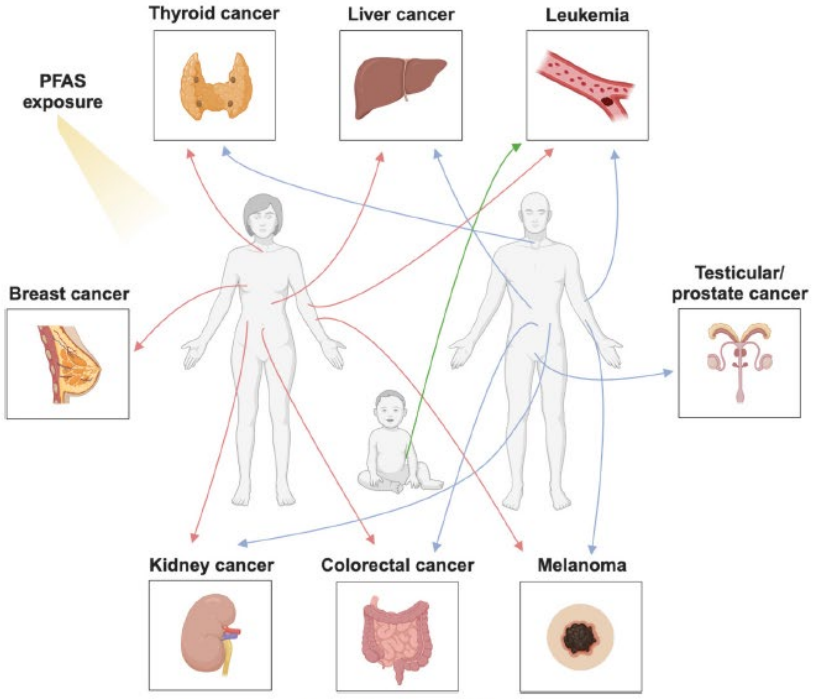


Fig. 3. Reported potential cancer related to PFAS exposure.

[8] Exposure to PFAS is also associated with changes in hormonal balance and thyroid function, weakened immune response, increased cholesterol, harm to the developing fetus (including reducing newborn birth weight), higher risk for general mortality, diabetes, cerebrovascular disease, myocardial infarction, Alzheimer's, and Parkinson's. It is also believed to bioaccumulate in the brain and interrupt the central nervous system, although further research is needed to confirm this. There is significant evidence PFAS is an immunosuppressant, impacts metabolism, and impacts the endocrine system. The Agency for Toxic Substances and Diseases found a decreased antibody response to vaccines and a higher risk for asthma resulting from PFAS exposure. PFAS exposure has the developmental effect of altering behavior and accelerating puberty. Potential impacts to human health are not necessarily limited to close distances. Some of the pollutants created from waste incineration – such as sulfur dioxide and nitrogen oxides – can travel up to hundreds of miles. See U.S. EPA, What is Interstate Air Pollution Transport? (Feb. 17, 2023). Second, some studies have shown high odds ratios for soft tissue sarcoma and dioxin exposure for local residents living within 2-4

any elected official should want to avoid. Second, and as important from a *procedural* perspective, U.S. EPA's acknowledgment of its uncertainty with respect to how effective municipal incinerators are in removing PFAS from air emissions refutes the position that Mayor Levine Cava has taken in several public forums. For example, in an interview posted to the Miami's Community News on October 30, 2024, she stated as follows:

> "[A trash incinerator] looks like it's one important way to deal with PFAS, the 'forever chemicals' that we're very concerned about… Apparently, that is a way that PFAS can be eliminated from the waste stream . . . ."[9]

The materials enclosed with, and referenced by, this letter demonstrate that the Mayor's position is overly simplistic and untrue. There is no science or data that demonstrates with certainty that PFAS can be removed from the emissions of a municipal solid waste incinerator,[10] and neither you nor any of your

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kilometers (km) of waste incinerators (i.e., about 1.2-2.4 miles). See, e.g., Peter W. Tait, et al., *The health impacts of waste incineration: a systematic review*, 44 Australian & New Zealand J. of Pub. Health 40-48 (Feb. 2020); see also Jean-Francois Viel, et al., *Soft-Tissue Sarcoma and Non-Hodgkin's Lymphoma Clusters around a Municipal Solid Waste Incinerator with High Dioxin Emission Levels*, 152 Am. J. of Epidemiology 13-19 (Jul. 2000). Other studies have found increased risk of congenital abnormalities in fetuses as far as 10 km away from waste incinerators (about 6 miles). See Giovanni Vinti, et al., *Municipal Solid Waste Management and Adverse Health Outcomes: A Systematic Review*, 18 Int'l J. Env't Res. Pub. Health 4331-4357 (Apr. 2021).

[9] The accuracy and candor of Mayor Levine Cava's statements regarding the effectiveness of incinerator for destroying PFAS is further called into question by numerous other scientific studies and journalistic reporting, including the following:

- Incineration may spread, not break down PFAS: Preliminary data show soil and water near New York facility are contaminated," written by Cheryl Hague and published in Chemical & Engineering News on April 27, 2022.
- "Rise in PFAS Incineration Puts Spotlight on Air Pollution Risk," written by Jennifer Hijazi and Pat Rizzuto and published in Bloomberg Law on October 24, 2024.
- "Forever Chemicals Persist through Waste Incineration, Researcher Finds," written by Sara-Lena Brännström and posted to phys.org on September 19, 2024 ("PFAS, often called 'forever chemicals,' present in municipal solid waste can survive the high temperatures of waste incineration and continue to spread into the environment via residues from waste-to-energy plants.").
- "Waste Incinerators May Be Spreading 'Forever Chemicals' Through the Air: Research Suggests Waste Incinerators Are Contributing to Airborne PFAS Pollution, which U.S. Regulators Aren't Tracking," written by Mariana Schauffler, Environmental Health News, and published on April 2, 2022

[10] As discussed above, U.S. EPA itself openly acknowledged this uncertainty in its January 2025 Draft Sewage Sludge Risk Assessment. That statement echoes an earlier and *even more express concession* by U.S. EPA about the data limitations regarding PFAS destruction through *municipal waste incineration* (as contrasted with thermal treatment in a hazardous waste incinerator) as forth in a study exclusively focused on the topic, "Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances" (the "Interim PFAS Disposal Guidance"):

> Thermal treatment at lower temperatures including municipal waste combustors (MWCs), sewage sludge incinerators (SSIs), or HWCs [Hazardous Waste Combustors] operating at lower temperatures or feeding solid or containerized PFAS-containing materials. Some HWCs operate at temperatures near or below 1,100°C, MWCs typically operate between 850 and 1,000°C, and SSIs typically operate at even lower temperatures. There is uncertainty associated with this option because it is based on very limited research. While limited, existing datapoints suggest the potential for air emissions of PFAS and PICs orders of magnitude above detection limits at temperatures below 1,000°C (Shields et al., 2023). There are no data on the treatment of solid materials or containerized wastes at lower temperatures. There are currently insufficient data and information to conclude anything about PIC formation or PFAS air emissions from full-scale

colleagues on the Commission should rely on it. In fact, we recommend that at the 28 January 2024 Committee of the Whole Meeting of the Board of the County Commissioners you direct the Mayor and her staff and retained consultants to provide factual support for such a statement. The risk to human health and the environment is too high to leave such a statement unverified.

We also wanted to take the opportunity today, as you continue to prepare for the Committee of the Whole discussion on January 28, 2025, and a determinative vote on siting the WTE facility next month, to make you and your colleagues on the Commission aware of yet additional materials that provide another perspective on the wisdom, protectiveness, and financial viability of reinvesting in WTE technology in Miami-Dade County. These materials, intensely data-centric and carefully fact checked, are intended to carefully probe three key arguments that Mayor Levine Cava and her staff and consultants continue to make in support of building a new WTE facility in Miami-Dade County.

1. **Palm Beach Renewable Energy Facility 2 is "State-of-the-Art" and "Has Worked Fabulously"**

The Mayor and her staff and retained consultants have consistently touted the new WTE facility in Palm Beach County as a model of performance, efficiency, and environmental and health compliance. However, an objective analysis of the regulatory record, consisting of a review of compliance and enforcement documents maintained by the Florida Department of Environmental Protection tells a very different story. Please see the enclosed report at Exhibit E entitled "**Operating Track Record of the Cleanest and Green Trash Incinerator in the United States: A Critical Review of Select Air Permitting Files from the Florida Department of Environmental Protection on Palm Beach Renewable Energy Facility 2 in West Palm Beach, Florida**," dated January 24, 2025, issued by Energy Justice Network, which documents 176 incidents, including emission limit exceedances, emissions equipment malfunctions, lost emissions data, and more, in just the first decade of operation.

2. **Incinerators Will Not Result in Levels of Air Emissions that Will Adversely Impact the Environment or Cause Damage to Public Health**

The Mayor and her staff and retained consultants have consistently touted the technology uses for Waste-to-Energy as being safe for the environment and safe for human health. This position is not remotely accurate and fails to tell the complete story of chemicals that will be released into the environment and the

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> combustion units operating at these lower temperatures or when feeding solid materials or containerized wastes. Because there are insufficient data available, there is low confidence in the reliability of this technology to control PFAS releases (see Section 3.a).

A copy of the Interim PFAS Disposal Guidance, released on April 8, 2024, can be found at Exhibit C. The data limitation and scientific uncertainty about complete destruction of PFAS by municipal incinerators is restated more succinctly in the companion Fact Sheet issued by U.S. EPA:

> New research since 2020 indicates that thermal treatment units operating under certain conditions are more effective at destroying PFAS and minimizing releases or exposures (Section 3). Certain hazardous waste combustors and certain granular activated carbon (GAC) reactivation units may operate under these conditions, but uncertainties remain. **For example, more information is needed to determine whether** harmful products of incomplete combustion or **PFAS air emissions are formed by units operating at lower temperatures (e.g., municipal waste combustors)**.

A copy of the Fact Sheet is enclosed at Exhibit D.

adverse impacts on plants, animals, and human health that will follow. The report attached at Exhibit F, "**Quantitative Analysis of Projected Emissions from Proposed Miami-Dade County Trash Incinerator: An Evaluation of Miami-Dade County's Claims that a New 4,000 Ton/Day Mass Burn Incinerator Will Result in No Unacceptable Pollution Impacts**," dated January 24, 2025, issued by Energy Justice Network, presents a very different picture, concluding, among other things, that a new 4,000 ton/day trash incinerator in Miami-Dade County would (i) be one of the largest industrial air polluters in the County; (i) rank first in air emissions of ammonia, cadmium, dioxins/furans,[11] hydrochloric acid, and sulfur dioxide, third in greenhouse gases and mercury, fourth in nitrogen oxides, seventh in lead and particular mater, and ninth in carbon monoxide; and (iii) account for 73% of the dioxin and furan emissions from industry in the county.

3. **Incineration Provides a More Environmentally and Financially Responsible Solid Waste Management Option Than Landfilling**

The Mayor and her staff and retained consultants have consistently maintained, and asserted before the Miami-Dade County Commission, that incineration is better for the environment, better for climate, and less expensive than landfilling. Our analysis, reflected in the report attached at Exhibit G, "**Most Responsible Landfill Options for Miami-Dade County**," dated January 24, 2025, issued by Energy Justice Network, reaches the opposite conclusion. Specifically, a study of comprehensive life cycle assessments of waste systems conducted in other communities have shown that incineration (and, of course, landfilling the ash) is 2 – 3 times more harmful for human health and the environment, *including climate impacts*, than landfilling waste directly without burning it first. The report evaluates landfill options in Florida and Georgia to identify options that are environmentally, ecologically, and financially responsible. This analysis looked at 18 metrics and grouped them into ten criteria: (i) transportation distance, rail access, and cost; (ii) available capacity; (iii) population impacted; (iv) environmental justice impacts; (v) environmental compliance; (vi) landfill ownership; (vii) landfill gas management methods; (viii) rainfall affecting landfill gas generation; (ix) future availability as incinerators retire; and (x) acceptance of out-of-county municipal solid waste. These criteria were then weighted to produce a single score and an ultimate ranking of 63 landfills. As you will see, there are **12 viable landfill options outside of Miami-Dade County** to consider before the ranking methodology reaches the first landfill located in Miami-Dade County.

The Board of County Commissioners has a historic opportunity to eliminate incineration as a source of PFAS generation and aerial distribution in and far beyond the borders of Miami-Dade County. We are hopeful that the materials presented herein will provide you and your colleagues with the information needed to complete your understanding of this imminent and substantial risk to human health and the

[11] For a discussion of health impacts from dioxin, which is a known human carcinogen and endocrine disrupter, see Ziwei Shi, et al., *The burden of cancer attributable to dietary dioxins and dioxin-like compounds exposure in China, 2000–2020*, Env't Int'l (2024). See also Hui-Ru Li, et al., *Occurrence and carcinogenic potential of airborne PBDD/Fs and PCDD/Fs around a large-scale municipal solid waste incinerator: A long-term passive air sampling study*, 178 Env't Int'l 108104 (2023). Exposure to PFAS increases the risk to multiple types of cancer. Jie Zheng, et al.

environment.[12] This discussion and the documents enclosed and otherwise referenced herein provide important, missing perspective that you and your colleagues are not receiving from the Mayor, her staff, or her consultants to make the right decision for your constituents, for the County, and for those who live beyond the County's borders that will surely suffer too. Thank you for your consideration of the matters discussed herein.

Sincerely,

Wayne M. Messam, Mayor
City of Miramar

cc: Honorable Commissioner Oliver G. Gilbert III, District 1, Miami-Dade County
Honorable Commissioner Marleine Bastein, District 2, Miami-Dade County
Honorable Commissioner Keon Hardemon, District 3, Miami-Dade County
Honorable Commissioner Micky Steinberg, District 4, Miami-Dade County
Honorable Commissioner Eileen Higgins, District 5, Miami-Dade County

[12] Turning a blind eye to the dispersal of PFAS from a new incinerator in Miami-Dade County also invites expensive litigation. For example, based on well settled law as established by the Florida Supreme Court, windborne dispersion of PFAS from an incinerator will create strict liability exposure to private party claims for economic damages. In *Curd v. Mosaic Fertilizer, LLC*, 39 So. 3d 1216 (Fla. 2010), copy enclosed at Exhibit H, commercial fisherman alleged that a fertilizer company owned or controlled a phosphogypsum storage area near Archie Creek in Hillsborough County. The storage area included a pond enclosed by dikes, containing wastewater from a phosphate plant. This wastewater allegedly contained pollutants and hazardous contaminants. On September 5, 2004, the dike was breached, and pollutants were spilled into Tampa Bay. The fishermen claimed that the spill resulted in a loss of underwater plant life, fish, bait fish, crabs, and other marine life that damaged the reputation of the fishery products. They alleged monetary damages in the nature of lost income or profits. The complaint included a claim for statutory liability under section 376.313(3), Florida Statutes. In language that potentially foreshadows how sweeping a judgment against Miami-Dade County could be for damage to economic interests in property caused by PFAS containing incinerator emissions, the Court stated as follows:

> "We find that section 376.313(3) and the language used in section 376.30 are clear and unambiguous, and we rely solely on their plain language to discover the legislative intent. Section 376.313(3) provides that 'nothing ... prohibits any person from bringing a cause of action ... for all damages resulting from a discharge or other condition of pollution.' § 376.313(3). The language of the statute allows any person to recover for damages suffered as a result of pollution. 'Damage,' as used in chapter 376, is defined as 'the documented extent of any destruction to or loss of any real or personal property, or the documented extent, pursuant to s. 376.121, of any destruction of the environment and natural resources, including all living things except human beings, as the direct result of the discharge of a pollutant.' See § 376.031(5). Moreover, the Legislature intended that the statute be liberally construed. See § 376.315 ('Sections 376.30–376.319 ... shall be liberally construed to effect the purposes set forth under ss. 376.30–376.319 and the Federal Water Pollution Control Act, as amended.'). The title of section 376.313, 'Nonexclusiveness of remedies and individual cause of action for damages under ss. 376.30–376.319,' implies that a liberal construction should be applied under these circumstances."

Also of note in evaluating the fullness of the County's potential exposure to liability for the windborne dispersion of PFAS-impacted emissions is *Lieupo v. Simon's Trucking, Inc.*, 286 So. 3d 143 (Fla. 2019), copy enclosed at Exhibit I, holding that the plain meaning of "all damages" includes personal injury damages.

We are also advised by our counsel that federal claims for aerial deposition of PFAS contamination - including under the Comprehensive Environmental Response, Compensation, and Liability Act (also known as the Superfund law) – are beginning to be filed around the country. See, e.g., *State of Maryland v. W.L. Gore and Associates, Inc.*, No. 1:24-cv-03656 (D. Md. Dec. 18, 2024), copy enclosed at Exhibit J, a complaint last month alleging, among other things, that the defendant "contaminated soil, groundwater, surface waters, and drinking water supplies in Maryland with PFOA and other PFAS via *aerial emissions* [emphasis added] and discharges to water."

Honorable Commissioner Kevin M. Cabrera, District 6, Miami-Dade County
Honorable Commissioner Raquel A. Regalado, District 7, Miami-Dade County
Honorable Commissioner Danielle Cohen Higgins, District 8, Miami-Dade County
Honorable Commissioner Kionne, L. McGhee, District 9, Miami-Dade County
Honorable Commissioner Roberto J. Gonzalez, District 11, Miami-Dade County
Honorable Commissioner Juan Carlos Bermudez, District 12, Miami-Dade County
Honorable Commissioner René Garcia, District 13, Miami-Dade County
Honorable Mayor Daniella Levine Cava, Miami-Dade County
Honorable Commissioner Winston F. Barnes, City of Miramar
Honorable Commissioner Maxwell B. Chambers, City of Miramar
Honorable Commissioner Yvette Colbourne, City of Miramar
Norman C. Powell, Esq., City Attorney, City of Miramar