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Committee on Agriculture

STATUS OF HEALTH-RELATED CONSEQUENCES TO MUCK FARM WORKERS IN THE LAKE APOPKA REGION

Statement of the Issue

Lake Apopka, located 15 miles northwest of Orlando,¹ is Florida's fourth largest lake.²

During the 1940s, the State of Florida gave away thousands of acres of wetlands along the north shore of Lake Apopka to encourage row crop, or "muck," farming operations on the fertile peat soils.³ During World War II, in an effort to increase crop production to support the war effort, the northern marshlands of the lake were drained to expose the rich muck soil bottom.⁴ A series of dikes and levees was constructed to separate some 20,000 acres of land from the lake itself.⁵ This area was cultivated for the agricultural production of vegetables, including corn, carrots, cucumbers, radishes, and lettuce.⁶ According to the St. Johns River Water Management District, 35 large and small farms worked the north-shore muck.⁷ The farms employed about 2,500 workers at peak season.⁸

Over time, pollutants entered Lake Apopka and it became Florida's most polluted large lake.⁹ The decline of Lake Apopka can be traced to the loss of 20,000 acres of wetlands along the lake's north shore to farming operations in the 1940s, agricultural discharges laden with phosphorus until the late 1990s, treated wastewater discharges from shoreline communities prior to the 1980s, discharges from citrus processing plants prior to the 1980s,¹⁰ organic compounds from nearby fiberglass and plastics manufacturing companies, and other industries located within the community, two local industrial landfills, two Superfund sites on Lake Apopka, and a medical waste incinerator.¹¹ Additionally, in 1947, a hurricane destroyed most native aquatic vegetation and stirred up the bottom sediments.¹² The increased nutrients caused an increase in algae production and the suspended sediments turned the lake water cloudy and prevented sunlight from reaching underwater vegetation. Without sufficient sunlight, the submerged vegetation died, resulting in even more nutrient releases to the lake, eliminating the bottom stabilization function of the vegetation and destroying habitat critical to fish and wildlife.¹³

¹ Industrial Economics, Incorporated and St. Johns River Water Management District, "Final Lake Apopka Natural Resource Damage Assessment and Restoration Plan," (June 2004): 1.

² Daniel Canfield, Jr., Roger Bachmann, and Mark Hoyer, "A Management Alternative for Lake Apopka," (2000): 206.

³ Mary Jane Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," *Nebraska Law Review*, Vol. 87, Issue 4, (2008): 966.

⁴ Ron Habin, PhD and Geraldean Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," (May 2006): 30.

⁵ Ibid.

⁶ Ibid.

⁷ Parcels in St. Johns River Water Management District's Lake Apopka Restoration Area, North Shore, as of October 4, 2011.

⁸ Ron Habin, PhD and Geraldean Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," (May 2006): 8.

⁹ Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," 967.

¹⁰ St. Johns River Water Management District, "Lake Apopka," (2011), Retrieved from <http://www.sjrwmd.com/lakeapopka/>.

¹¹ Habin and Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," 4.

¹² Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," 967.

¹³ Ibid., 968.

The Florida Legislature enacted legislation in 1996 (Chapter 96-207, Laws of Florida) that provided for restoration of the Lake Apopka Basin through acquisition of the land and facilities in agricultural production to reduce a major source of phosphorus pollution to the lake. The intent of the Legislature, as expressed in s. 373.461(1), F.S., was to provide for a fair and equitable program of acquisition of the lands and facilities, with the St. Johns River Water Management District in charge of the buy-out.

Many of the former Lake Apopka farm workers are experiencing significant and life-threatening health problems which they believe to be connected to their exposure to multiple sources of environmental contamination.¹⁴

This issue brief will review the history of muck farming near Lake Apopka, the efforts to end farming in the region through acquisition of the land used for farming, publications describing the degradation of Lake Apopka, and reports that nonpoint source pollution associated with the degradation of Lake Apopka has caused health problems for some Lake Apopka area farm workers.

Discussion

History of Lake Apopka

The following timeline is a general overview of significant events, relevant to the purpose of this issue paper, which contributed to the changes in the environmental health of Lake Apopka. The timeline is not intended to be comprehensive, but to serve as general information concerning the degradation of the lake, its restoration, and the farm workers who lived and worked around the lake:

1880 – The Apopka-Beauclair Canal was constructed to create a waterway for navigation and agricultural use.¹⁵

1883 – Lake levels dropped three feet and exposed the sediment surface of the marshes, allowing small farms to spring up around the lake.¹⁶

1893 – Twelve miles of canal connecting Lake Apopka through Lakes Beauclair, Dora, Eustis, and Griffin were completed which lowered the water surface of Lake Apopka by approximately one meter, exposing the sediment surface of most of the sawgrass marsh on the north shore.¹⁷

1922 – The Winter Garden Control Facility (sewage treatment plant) was constructed and began releasing effluent into the lake. It served a population of between 1,500 and 3,250. In addition, discharges from nearby citrus packing and processing plants began entering the lake.¹⁸

1926 – 4A hurricane in September placed 6 to 8 feet of water in the north-shore wetlands.¹⁹

1940 – Dense growths of aquatic weeds appeared in the lake.²⁰

1941 – The Legislature created the Zellwood Drainage and Water Control District which constructed a levee between the north shore marshlands and the lake, causing the lake level to rise two feet above the farm lands.²¹

¹⁴ Habin, PhD and Matthew, “Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey,” 9.

¹⁵ Friends of Lake Apopka, “Lake Apopka Timeline,” (2011): 2.

Schelske, Lowe, Battoe, Brenner, Coveney and Kenney, “Abrupt Biological Response to Hydrologic and Land-Use Changes in Lake Apopka, Florida, USA,” *Ambio*, Volume 34, No. 3, (May 2005): 192.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Friends of Lake Apopka, “Lake Apopka Timeline,” “ 2.

Canfield, Jr., Bachmann, and Hoyer, “A Management Alternative for Lake Apopka,” 207.

²¹ Ibid.

1942 – Farms began drainage water discharges into Lake Apopka.²²

1946 – A documented die-off of submerged vegetation began.²³

1947 – Algal blooms were reported for the first time on Lake Apopka. A hurricane destroyed most native aquatic vegetation and stirred up bottom sediments.²⁴

1962-63 – Major fish die-offs were reported.²⁵

1964 – Winter Garden sewer treatment plant now serving a population of 5,000, with effluent to Lake Apopka. Effluent enters mile long ditch (channelized Lulu Creek) which also serves Winter Garden Citrus Products plant.²⁶

1965 – Almost all former marsh and land on the north-shore of the lake now being farmed, most producing three crops annually. Commercial catfish harvesting stopped because DDT concentration in fish exceeded allowable limits.²⁷

1966 – The state threatens citrus plant with legal action over discharges to Lake Apopka. Orange County and Lake County share cost of biochemical study of Lake Apopka (\$5,000).²⁸

1969 – Winter Garden Citrus Products adds treatment process, reduces strength of effluent discharged to Lake Apopka.²⁹

1971-1973 – Outbreak of bacterial disease kills thousands of fish, and many birds, alligators, snakes and turtles, gets nationwide attention. Fish camps begin to disappear.³⁰

1977 – Winter Garden Citrus Products completes percolation ponds and spray fields, reduces discharge to cooling water.³¹

1979 – Final Environmental Impact Statement for Lake Apopka restoration project completed by the U.S. Environmental Agency.³²

Analysis of HB 1609, (1999): 2.

²² Friends of Lake Apopka, "Lake Apopka Timeline," 2.

St. Johns River Water Management District, "Florida Water Management History: 1900 through 1949." (2011): 2.

²³ Friends of Lake Apopka, "Lake Apopka Timeline," 2.

Industrial Economics, Incorporated, "Final Lake Apopka Natural Resource Damage Assessment and Restoration Plan," 2.

²⁴ Friends of Lake Apopka, "Lake Apopka Timeline," 2.

Schelske, Lowe, Battoe, Brenner, Coveney and Kenney, "Abrupt Biological Response to Hydrologic and Land-Use Changes in Lake Apopka, Florida, USA," 197-198.

Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," 967.

²⁵ Friends of Lake Apopka, "Lake Apopka Timeline," 3.

Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," 967-968.

²⁶ Friends of Lake Apopka, "Lake Apopka Timeline," 3.

Jason Garcia, "Pollution Rises as Talk Lingers on." *Orlando Sentinel*, (May 31, 2004).

²⁷ Friends of Lake Apopka, "Lake Apopka Timeline," 3.

Jim Thomas, "The Story of Lake Apopka—A Historic Review," *Florida Naturalist*, (1999).

²⁸ Friends of Lake Apopka, "Lake Apopka Timeline," 3

United States Environmental Protection Agency, "Complete Mix Activated Sludge Treatment of Citrus Process Wastes," (August 1971): 6.

²⁹ Ibid.

³⁰ Friends of Lake Apopka, "Lake Apopka Timeline," 4.

Allan Woodward, Franklin Percival, Michael Jennings, and Clinton Moore, "Low Clutch Viability of American Alligators on Lake Apopka," *Florida Scientist*, Volume 56(1), (1993): 54.

³¹ Friends of Lake Apopka, "Lake Apopka Timeline," 4.

Canfield, Jr., Bachmann, and Hoyer, "A Management Alternative for Lake Apopka," 207.

1981 – Massive fish kills in Lake Apopka reported. Revised restoration plan proposed which includes a partial drawdown at a cost of \$3 million.³³

1985 – The Legislature created the Lake Apopka Restoration Act of 1985, establishing the Lake Apopka Restoration Council and Technical Advisory Committee, which paved the way for the restoration work to begin. A total of \$2.265 million was appropriated to initiate feasibility studies, evaluate restoration techniques, and develop a nutrient budget. The District and the council reviewed a full range of proposals and reported to the Legislature on the plan's development and the consensus for action.³⁴

1986 – Comprehensive pilot projects recommended by the Lake Apopka Restoration Council to the SJRWMD were initiated. The development of internal and external nutrient budgets for the lake are begun.³⁵

1987 – The Legislature passed the Surface Water Improvement and Management Act. Lake Apopka was named as a priority for restoration, one of seven water bodies so designated statewide.³⁶

1993 – Watershed modifications (e.g. farm retention ponds) to reduce nutrient loading began and are presently ongoing as parcels on the former farms are flooded and drainage water discharges are reduced.³⁷

1995 – University of Florida researcher, Dr. Louis Guillette, published studies linking reproductive abnormalities of the Lake Apopka alligators to organochlorine pesticides in various peer-reviewed scientific journals.³⁸ Several small patches of eelgrass were observed near north shore.³⁹

1996 – The Legislature passed the Lake Apopka Improvement and Management Act which found it to be in the public interest to save the lake by purchasing all the muck farms to reduce a major source of phosphorus pollution. The SJRWMD was put in charge of the buy-out program.

s. 373.461(1) FINDINGS AND INTENT.—

(a) The Legislature has expressed its intent that economically and technically feasible methods be developed to restore the Lake Apopka Basin through the Lake Apopka Restoration Act and the Surface Water Improvement and Management Act. It is the Legislature's intent to enhance and accelerate the restoration process begun by those previous acts of the Legislature.

(c) Acquisition of the lands in agricultural production which discharge phosphorus to Lake Apopka, and their related facilities, would serve the public interest by eliminating the impacts of

³² Friends of Lake Apopka, "Lake Apopka Timeline," 4-5.

U.S. Environmental Protection Agency, "Final Environmental Impact Statement for Lake Apopka Restoration Project, Lake and Orange Counties, Florida," (1979), EPA 904/9-79-043.

³³ Friends of Lake Apopka, "Lake Apopka Timeline," 5.

Town of Oakland, Florida, "Oakland Time Line." (2011), retrieved from <http://www.oaktownusa.com/oakland-time-line/>.

³⁴ Friends of Lake Apopka, "Lake Apopka Timeline," (2011): 5.

Industrial Economics, Incorporated, "Final Lake Apopka Natural Resource Damage Assessment and Restoration Plan," (June 2004): 2.

Kevin Spear, "Lake Apopka Cleanup Panel is Disbanded," *Orlando Sentinel*, (January 10, 1990).

³⁵ Friends of Lake Apopka, "Lake Apopka Timeline," 5.

Ramsey Campbell. "Strain on Water Quality Increasing with Growth," *Orlando Sentinel*, (November 9, 1986).

³⁶ Friends of Lake Apopka, "Lake Apopka Timeline," (2011): 5.

Southwest Florida Water Management District, *About the Surface Water Improvement and Management Program*, (2011).

³⁷ St. Johns River Water Management District, "Water Quality Changes in Lake Apopka, Florida," (March 2010): 3.

³⁸ Louis Guillette, Jr., Timothy Gross, Andrew Rooney, and Franklin Percival, "Gonadal Steroidogenesis in Vitro from Juvenile Alligators Obtained from Contaminated or Control Lakes," *Environmental Health Perspective*, Vol. 103, Supplement 4 (May 1995): 31-36.

³⁹ Friends of Lake Apopka, "Lake Apopka Timeline," 6.

St. Johns River Water Management District, "Water Quality Changes in Lake Apopka, Florida," 13.

introduction of phosphorus from these sources into the lake. It is the Legislature's intent that a fair and equitable program of acquisition of the lands necessary to achieve the purposes of this section be implemented.

1997 – The Legislature specified how funds were to be used for the buy-out program.

s. 373.461 (5)(g) PURCHASE OF AGRICULTURAL LANDS.—

(g)1. The proceeds of sale of tangible personal property authorized by paragraph (f) shall be distributed as follows: 60 percent to Orange County; 25 percent to the City of Apopka; and 15 percent to Lake County.

2. Such proceeds shall be used to implement the redevelopment plans adopted by the Orange County Board of County Commissioners, Apopka City Commission, and Lake County Board of County Commissioners.

3. Of the total proceeds, the Orange County Board of County Commissioners, Apopka City Commission, and Lake County Board of County Commissioners, may not expend more than:

- a. Twenty percent for labor force training related to the redevelopment plan;
- b. Thirty-three percent for financial or economic incentives for business location or expansion in the redevelopment area; and
- c. Four percent for administration, planning, and marketing the redevelopment plan.

4. The Orange County Board of County Commissioners, Apopka City Commission, and Lake County Board of County Commissioners must spend those revenues not expended under subparagraph 3. for infrastructure needs necessary for the redevelopment plan.

1996-1998 – The state and federal government purchased about 13,978 acres of farmland east of the Apopka-Beauclair Canal from 34 large and small landowners, spending \$100,939,000. One hundred acres were later surplused, leaving 13,878. In addition to the land, the buy-out included the purchase of farm infrastructure and farm equipment.⁴⁰ This left about 2,500 farm workers out of work.⁴¹ Having no use for the farm equipment, SJRWMD sold the equipment at auction, with the money from the sale to be divided among local governments to address the economic impacts of the buy-out to the local economies. Twenty percent of the money the state got when it auctioned off the farm equipment was to be provided for retraining and re-employment of the farm workers.⁴²

1998 – Farming and pesticide applications cease with the last farm crop, summer 1998.⁴³ The St. Johns River Water Management District reported expenditures exceeding \$90 million for the acquisition of land and equipment for the Lake Apopka restoration project pursuant to s. 373.461, F.S. Approximately \$86 million of the \$90 million was for the acquisition of land and equipment for ten farms and equipment for one farm. The 1999-2000 General Appropriations Act proviso language allocated \$11 million for the purchase of additional Lake Apopka lands.⁴⁴

⁴⁰ Mike Slayton, St. Johns River Water Management District, information by telephone, July 19, 2011; and State of Florida Auditor General, "Management of the Acquisition and Disposition of Equipment Related to the Lake Apopka Restoration by the St. Johns River Water Management District and the Florida Department of Management Services," (April 26, 2000): 13.

⁴¹ Habin, PhD and Mathew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," 8.

⁴² s. 373.461 (5)(g), F.S.

⁴³ Friends of Lake Apopka, "Lake Apopka Timeline," 7.

Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," 982.

⁴⁴ "Management of the Acquisition and Disposition of Equipment Related to the Lake Apopka Restoration by the St. Johns River Water Management District and the Florida Department of Management Services," 13.

1999 – According to SJRWMD, close to 700 fish-eating birds were found dead on the flooded farm lands. A subsequent 2001 investigation by the U.S. Fish and Wildlife Service revealed that they believed the birds died due to high levels of a combination of organochlorine pesticides.⁴⁵

2002 – The St. Johns River Water Management District Governing Board adopted a new regulation specific to the Lake Apopka Basin which placed severe restrictions on the amount of phosphorous that can be discharged into Lake Apopka or its tributaries.⁴⁶

2007-2010 – After years of studies on residual pesticides, deep soil inversion was begun in the North Shore Restoration area. Testing of fish tissue indicated low levels of pesticides. This is important because if this holds for the necessary time period, it confirms that the soil inversion was successful in that area.⁴⁷

Farm Worker Community

About 2,500 Haitian, Hispanic, Caucasian, and African-American farm workers worked in the Lake Apopka farm fields and the processing and packing houses planting, harvesting, packing and shipping produce to market. This population contained individuals and families of all age groups, including the elderly.⁴⁸ Most of them worked the seasons from September to June. The majority of workers were seasonal, many returning to the area year after year. The Lake Apopka farm worker community was a more established community and many lived in the area even during the farms' off seasons. The majority were not migrants and chose to remain in the area after the farm buy-outs rather than relocating to find other work. Many of the farm workers worked for decades on the farms and some even worked generationally, with grandparents, parents and children all having worked on the farms at some point in their lives, or for their whole lives. Though there were established communities of Hispanics and Haitians in the area, in general the Hispanics and Haitians who worked on the Lake Apopka farms were less likely to have put down permanent roots in the Apopka area.⁴⁹

Farm workers, who earned a living from these farming operations for years and even generations, lost their livelihoods when the state purchased the farms from the owners and some, who lived in company-provided housing, no longer had that option.⁵⁰ Most Hispanic farm workers relocated to other areas and/or found employment in construction or other industries, and most Haitian farm workers either relocated or began working in other industries after the farms closed.⁵¹ The lifelong residents of the area sought work at day labor pools, temporary services, other agricultural jobs, or other industries far from the Apopka area. Many of the farm workers were too old to find other work and were left with no other source of income. Others, suffering from various health problems, began the process of applying for disability benefits.⁵²

Post-Lake Apopka Restoration Job Re-Training

In the fall of 1998, a retraining/re-employment program was implemented for the former farm workers through the federal Jobs and Training Partnership Program, with funds administered by the Central Florida Jobs and

⁴⁵ Industrial Economics, Incorporated, "Final Lake Apopka Natural Resource Damage Assessment and Restoration Plan," (June 2004): 3.

Lab Results Released From Lake Apopka Wildlife Death Investigation. U.S. Fish and Wildlife Service, Southeast Region, Press Release: June 11, 2001.

John Elliot, "Wildlife Ecotoxicology:Forensic Approaches," *Restoration of Lake Apopka's North Shore Marsh: High Hopes, Tough Times, and Persistent Progress*, 199.

⁴⁶Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience," 989.

⁴⁷ Friends of Lake Apopka, "Lake Apopka Timeline," 8.

St. Johns River Water Management District, Memorandum to Governing Board, (November 22, 2010).

⁴⁸ Jeannie Economos, "Future is Uncertain for Lake Apopka Farmworkers as Layoffs Near," *The Slant*, June 25, 1998.

⁴⁹ Jeannie Economos, The Farmworker Association of Florida, email to Senate Agriculture Committee, July 7, 2011.

⁵⁰ Habin, PhD and Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," 31.

⁵¹ Ibid., 11.

⁵² Jeannie Economos, The Farmworker Association of Florida, email to Senate Agriculture Committee, July 7, 2011.

Education Partnership, and in partnership with the Farmworker Association of Florida. Re-training programs such as secretarial, nursing, English as a Second Language and GED classes were offered in the area. Through this education program, small amounts of monetary assistance for childcare and transportation were offered to those participating in the classes. According to the Association, programs did not start until long after the farm workers were unemployed. Because of this, few farm workers were able to take advantage of the programs because many had to leave after the farms had closed to find immediate work. In addition, many of the older farm workers had known nothing but farm work for most of their lives and were not able to find the types of jobs that they could or would re-train to do. Computers were set up to help unemployed workers find jobs, but for workers who were older and/or who were not very literate, or for whom English was not their first language, the use of the computers was not feasible without the aid of a technical assistant. About 70 farm worker families received relocation assistance, most of whom were Hispanic and who had previously lived in company-provided housing through the Federal Uniform Relocation Assistance Act.⁵³ The farm owners also contributed funds and other resources to assist the displaced farm workers.⁵⁴

2005 - The Farmworker Association of Florida Survey of Lake Apopka Farm Workers

In 2005, the staff of the Farmworker Association of Florida, under the direction of local community leaders and Dr. Ron Habin, an independent anthropologist, who served as the principal investigator for the project, designed and implemented a health survey in which the farm workers were interviewed to assess their health problems and their exposure to pesticides and other environmental contaminants. The Farmworker Association of Florida interviewed 148 former Lake Apopka farm workers, and in May 2006 issued a report titled "Lake Apopka Farm Workers Environmental Health Project, Report on Community Health Survey, May 2006."⁵⁵

The participants of the survey were selected by the following methods:⁵⁶

- Identifying former co-workers of the project leaders and interviewers;
- Consulting a list of displaced Lake Apopka farm workers provided by the Department of Labor during FWF's project with Central Florida Jobs and Education Partnership (1998-1999);
- Referral of other former Lake Apopka farm workers by survey participants; and
- Word of mouth.

The survey results show that 92 percent of the 148 farm workers surveyed indicated that they were exposed to pesticides in the workplace through such routes as spray from an airplane, pesticide drift, touching plants with pesticide residues, and inhaling pesticides, among others.⁵⁷ When asked to characterize the current state of their health, 83 percent stated that they were in either "fair" or "poor" health. Eighty-five percent felt that their exposure to pesticides had affected their health, and 79 percent felt that their exposure to pesticides directly related to their current health problems.⁵⁸ No scientific study on the farm workers' health problems could be found that would support the findings in the survey.

Pesticide Regulations

The federal government has regulated pesticides since the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) was first passed in 1947. Since then, pesticide products have been subject to federal regulation under FIFRA.⁵⁹ Administered by the U.S. Environmental Protection Agency (EPA), FIFRA requires that pesticide products be registered and labeled. Additionally, it requires that applicators of pesticides that may be hazardous

⁵³ Ibid.

⁵⁴ Larry Beasley, PhD, email to Senate Agriculture Committee, August 19, 2011.

⁵⁵ Habin, PhD and Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," 3.

⁵⁶ Ibid., 9.

⁵⁷ Ibid., 4.

⁵⁸ Ibid., 4.

⁵⁹ U.S. Environmental Protection Agency Worker Protection Standard, 57 Final Rule 38102-01, "Legal Authority," (1992): 3.

be certified. This federal regulatory scheme applies to the distribution, sale, or use of pesticides in any state. While the EPA is responsible for regulating, labeling, and packaging, states may regulate pesticide use and sales to the extent that such regulation does not conflict with federal law.⁶⁰

In 1974, EPA promulgated the regulations found at 40 CFR part 170. This part, entitled “Worker Protection Standards for Agricultural Pesticides,” dealt only with the pesticide-related occupational safety and health of “farm workers performing hand labor operation in fields after ground (other than those incorporated into the soil), aerial, or other type of application of pesticides.” Part 170 consisted of four basic requirements: (1) A prohibition against spraying workers and other persons; (2) a general reentry interval for all agricultural pesticides prohibiting reentry into treated fields until the sprays had dried or dusts had settled and longer reentry intervals for twelve specific pesticides; (3) a requirement for protective clothing for any worker who had to reenter treated fields before the specific reentry period had expired; and (4) a requirement for “appropriate and timely” warnings.⁶¹

In August, 1992, the EPA revised the Worker Protection Standard (WPS); see 40 CFR Part 170. The WPS is designed to protect a labor force of 3.9 million exposed either directly or indirectly to pesticides as a result of their occupations on farms, in forests, in nurseries, and in greenhouses, or in commercial pesticide-handling operations. This work force includes 1.4 million hired workers and handlers on farms, 92,000 hired workers and handlers in nurseries and greenhouses, and 10,000 hired workers and handlers in forests. There are also 38,000 commercial handlers who handle agricultural-plant pesticides. In addition, 2.36 million agricultural-establishment operators and unpaid workers (presumably family members) handle agricultural-plant pesticides or perform tasks related to the production of agricultural plants on farms, nurseries, and greenhouses.⁶²

The Federal Food, Drug, and Cosmetic Act (FFDCA) requires EPA to set tolerances, or maximum residue limits, for pesticide residues on foods. It further requires the EPA to make a finding that the tolerance is “safe.” Safe is defined as meaning that there is a “reasonable certainty that no harm will result from aggregate exposure to the pesticide residue.” To make the safety finding, EPA considers, among other things: the toxicity of the pesticide and its break-down products, aggregate exposure to the pesticide in foods and from other sources of exposure, and any special risks posed to infants and children. Some pesticides are exempted from the requirement to have a tolerance. EPA may grant exemptions in cases where the pesticide residues do not pose a dietary risk under reasonably foreseeable circumstances.⁶³

Likewise, the state of Florida has regulated the distribution, sale, and use of pesticides since 1965.⁶⁴ The Department of Agriculture and Consumer Services is responsible for enforcing the state’s version of the federal laws, called the “Florida Pesticide Law.” The state law is intended to protect people and the environment from the adverse effects of pesticides. To that end, the state has established the Pesticide Review Council. This council advises the Commissioner of Agriculture regarding the sale, use, and registration of pesticides within the state and serves as a forum for the coordination of pesticide-related activities.⁶⁵

According to the Florida Department of Agriculture and Consumer Services, prior to the inception of the Worker Protection Standard, the department relied on language that was stated on pesticide labels and could enforce that language through s. 487.031(10), F.S. It states that it is unlawful for any person to use any pesticide, including restricted-use pesticide, or to dispose of any pesticide containers in a manner other than as stated in the labeling or on the label or as specified by the department or the U.S. Environmental Protection Agency.⁶⁶

⁶⁰ The Environmental & Land Use Law Section of the Florida Bar, “Pesticide Regulation in Florida,” Retrieved from http://www.eluls.org/pest_reg.html.

⁶¹ U.S. Environmental Protection Agency Worker Protection Standard, 57 Final Rule 38102-01, “History of WPS,” (1992): 4.

⁶² EPA Worker Protection Standard, 57 FR 38102-01, “Regulatory Requirements,” (1992): 74-75.

⁶³ U.S. Environmental Protection Agency, “Summary of the Federal Food, Drug, and Cosmetic Act,” (2002), Retrieved from <http://epa.gov/lawsregs/laws/ffdca.html>.

⁶⁴ Chapter 487, F.S.

⁶⁵ The Environmental & Land Use Law Section of the Florida Bar, “Pesticide Regulation in Florida,” Pesticide Regulation in Florida,” Retrieved from http://www.eluls.org/pest_reg.html.

⁶⁶ Craig Bryant, Department of Agriculture and Consumer Services, email to Senate Agriculture Committee, September 6,

The department indicates that the labels prior to WPS contained a version of the following statement: “It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.” Prior to WPS, the department would cite s. 487.031(10), F.S., or reference that part of the label or both if a violation regarding exposure to agricultural workers was identified. Labels also contained specific language that prohibited the re-entry of agricultural workers for a specified length of time into fields that had been treated with a pesticide.⁶⁷

Originally the purpose of pesticide laws and regulations was to protect consumers from fraudulent claims about product performance, as well as to provide directions for application and safe use. Over the years, the focus has evolved to include the protection of health and the environment, and assuring that farm workers have safe working conditions.⁶⁸

2004 - St. Johns River Water Management District Report on Lake Apopka Soil Testing

In 2004, SJRWMD contracted with MACTEC Engineering and Consulting, Inc., to complete a Feasibility Study for a portion of the Lake Apopka North Shore Restoration Area (NSRA) located on the northern shores of Lake Apopka. The purpose of the feasibility study was to summarize the nature and extent of contamination and risks posed by organochlorine pesticides in soil, and to evaluate remedial alternatives that would permit planned restoration of wetlands that had been drained for agricultural use between 1941 and 1985. The feasibility study was performed using procedures adapted from U.S. Environmental Protection Agency guidance for performing feasibility studies for contaminated sites.⁶⁹

Extensive sampling revealed that toxaphene and dichlorodiphenyldichloroethylene (DDE) were the most prevalent organochlorine pesticides followed by dichlorodiphenyltrichloroethane (DDD), dieldrin, DDT, chlordane compounds, and endosulfan II.⁷⁰

2006 – Community Survey of Residents of Lake Apopka Communities

A community survey was conducted between February and July, 2006, with residents of communities adjacent to Lake Apopka in Lake and Orange Counties. The purpose of the survey was to assess perceptions of the community, health, and environmental issues that residents face in their communities. This study was funded by the University of Florida School of Natural Resources and the Environment, and was a collaboration between the Farmworker Association of Florida, the University of Florida College of Public Health and Health Professions, and the University of Florida Center for Governmental Responsibility. More than 250 people participated in the survey. The primary focus of the study was the Orange and Lake County residents who live near Lake Apopka. The sample was not population-based,⁷¹ but drawn from respondents gathering at local community centers, medical centers and clinics, nursery schools, continuing education programs, churches, and with fishers on Lake Apopka and adjacent streams.⁷²

2011.

⁶⁷ Ibid.

⁶⁸ U.S. Environmental Protection Agency, “Agricultural Pesticides,” Retrieved from <http://epa.gov/agriculture/ag101/croppesticideuse.html>.

⁶⁹ MACTEC Engineering and Consulting, Inc., “Lake Apopka North Shore Restoration Area Feasibility Study,” (January 2005): i.

⁷⁰ Ibid., 1-6.

⁷¹ Natalie Freeman, Joan Flocks, and Jeannie Economos, “The Environmental Health Needs Assessment in Lake Apopka Communities,” (May 2007): 2.

⁷² N. Freeman, M. Schuck, Z. Finch, E. Economos, S. Roberts, and J. Flocks, “Assessment of Residents’ Environmental Health Perceptions,” *Epidemiology*, Volume 17, Issue 6, (November 2006): S451.

Most of the respondents were young (47% under the age of 35), the majority (66%) was female, and the gender proportions did not vary greatly across ethnic groups.⁷³ Respondents reported a wide range of occupations and work activities. Primary reported work activities were homemaker, agriculture, and construction. Numerous individuals indicated multiple jobs. Only 23% of the respondents were over the age of 50 and only 9% were over the age of 65. While this is representative of the age distribution in Orange County, it under-represents the older population found in Lake County.⁷⁴ Survey questions inquired about the availability and quality of services within the community and what the respondent perceived as community needs. There were a total of 49 topics in the survey that addressed these various services and needs. Economic conditions appeared to drive many of the respondents' concerns. The most prevalent community concerns focused on low wages, local drug trafficking, and lack of access to dental care, health insurance and affordable housing. Many residents also raised concerns about gangs in the communities, a topic not addressed in the survey.⁷⁵

Concerns about low wages, job availability, and access to health care were greatest among those who lacked health insurance. Concerns about access to dental care and affordable housing were greater among those with at least a high school diploma. Concern about local drug trafficking was also greater among those with at least a high school diploma, although for all groups it was a major concern. In contrast, concerns about job availability and utility costs were consistent across all groups.⁷⁶ Most people were concerned about access to dental care.⁷⁷

Traffic congestion was the most frequently cited environmental concern. The environmental health issues which originally prompted this study (that is, issues related to health effects caused by environmental contamination) were of more concern for men than for women. Men were more likely to express concern about fishing and hunting conditions around Lake Apopka than were women. Proximity to Lake Apopka was not associated with concern about exposure to pesticides or environmental concerns other than fishing conditions. While some individuals were aware of potential environmental hazards in their communities, such as the garbage dump or contaminants from other sources, most of the concerns focused on more immediate issues such as traffic congestion and lack of street lights. About half of the respondents raised concerns about drinking water quality.⁷⁸

Survey respondents were asked what they believed the most important health concerns in their communities. Thirty-four topics were provided in the questionnaire and respondents could also add others. Of the 34 topics, the most important concerns were drug and alcohol abuse (37%), diabetes (35%), and dental problems (34%). Other health concerns included allergies, hypertension, asthma, and pneumonia/flu. Respondents did not know if lupus and autoimmune diseases were concerns, yet there are active lupus programs in Orange County and anecdotal evidence of high prevalence rates of autoimmune disease in the area.⁷⁹

The report concluded that survey respondents revealed many concerns that could be addressed through community actions or discussions with municipal and county government. These include concerns about drug trafficking, gangs, and lack of street lights. Traffic congestion may also be addressed at a community level. Concerns about access to health and dental care may be address in collaboration with the Orange and Lake County Health Departments or the University of Florida dental clinic in the Apopka area.⁸⁰

The Orange County Department of Health received funding in 2006 through a Protocol for Assessing Community Excellence in Environmental Health (PACE-EH) grant to conduct the Environmental Health Issue Survey.⁸¹ PACE-EH requires that surveys be self-reported by the community.⁸² Community activists interviewed 276 respondents in churches, community centers and door-to-door. The survey identified the priority environmental

⁷³ Freeman, Flocks, and Economos, *The Environmental Health Needs Assessment in Lake Apopka Communities*, 4.

⁷⁴ *Ibid.*, 5.

⁷⁵ *Ibid.*, 7.

⁷⁶ *Ibid.*, 7.

⁷⁷ *Ibid.*, 8.

⁷⁸ Natalie Freeman,, Joan Flocks, and Jeannie Economos, "The Environmental Health Needs Assessment in Lake Apopka Communities," 10.

⁷⁹ *Ibid.*, 11.

⁸⁰ *Ibid.*, 13.

⁸¹ Florida Department of Health, "Department of Health: Related Activities for Apopka, FL," (2006-2011): 1.

⁸² Orange County Health Department , "PACE-EH Progress Report," (April, 2007): 2.

and community health and safety issues that were of most concern to the Lake Apopka community. Twenty nine issues were identified as environmental health concerns. The top two concerns were the need for more medical and dental clinics and the need for more medical specialty care.⁸³

Apopka Area Health Care Services Delivery System

In 1973, four nuns founded what is now the Community Health Center, Inc. The mission of the original clinic was to give the Apopka area migrant workers and elderly access to affordable health care.⁸⁴ They opened a farm workers clinic in a trailer that was staffed by a doctor, nurse and an assistant. In 1978, the first permanent health center, the Apopka Family Health Center, was constructed in Apopka and continues to provide care to this day as part of the clinics in the Community Health Center, Inc., network.⁸⁵ It provides medical care, preventive dental care, health education and promotion, health assessments and screening, pharmaceuticals, laboratory, and X-ray services. Medical providers include physicians certified in Family Practice, Pediatrics, Obstetrics/Gynecology, and Internal Medicine.⁸⁶ According to the Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey, area health care clinics and local health department facilities need to have on staff specialists to address the muck farm workers' specific health needs, such as, dermatologists, rheumatologists, endocrinologists, and auto-immune specialists.⁸⁷

The Orange County Department of Health, Environmental Health Division, also works with community leaders and other service providers, such as the local community health center, to try to improve access to primary and specialty health and dental services and nutrition education. It employs approximately 641 professional and paraprofessional staff serving an estimated population of 1.2 million. These staff include: board certified physicians, registered nurses, advanced registered nurse practitioners, certified nurse midwives, dietitians, epidemiologists, social workers, and various other health care workers, disease intervention specialists, health educators, and environmental health specialists.⁸⁸ It has an office in Apopka that provides a Women, Infant and Children's program, Vital Statistics, and Healthy Start services. Two Environmental Health Services staff are also at this location.⁸⁹

In 1998, the Greater Florida Chapter of the Lupus Foundation of America established a local office in Apopka because more and more people in the area were being diagnosed with the disease.⁹⁰ The Lupus Foundation of Florida's Apopka branch office holds support group meetings every other month on the fourth Saturday of the month to provide information to persons with Lupus and their relatives.⁹¹

Proposed Funding for Health Care for Lake Apopka Area

The Legislature included a \$500,000 appropriation in the 2011 General Appropriations Act to address rural and minority health services in Apopka;⁹² the specific appropriation was vetoed by Governor Scott.⁹³ This budget item would have allowed the Apopka Family Health Center to bring in specialists such as rheumatologists, dermatologists, endocrinologists, nephrologists, and laboratory technicians to treat the serious, chronic health problems being experienced by the uninsured or underinsured members of the community. The appropriation

⁸³ Ibid., 1.

⁸⁴ Community Health Centers, Inc., "2007-2008 Annual Report."

⁸⁵ Community Health Center, Inc., "History," Retrieved from <http://chcfl.org/about/history/>.

⁸⁶ Community Health Center, Inc., "Medical Services," Retrieved from <http://chcfl.org/services/medical/>.

⁸⁷ Habin, PhD and Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," 28.

⁸⁸ Orange County Health Department, "Annual Report," (2010): 4.

⁸⁹ Florida Department of Health, "Department of Health: Related Activities for Apopka, FL," (2006-2011): 1.

⁹⁰ Habin, PhD and Matthew, "Lake Apopka Farmworkers Environmental Health Project Report on Community Health Survey," 21.

⁹¹ Telephone conversation on September 6, 2011, with Lupus Foundation staff person.

⁹² Chapter 2011-69, Section 3, Specific Appropriation 434, pp. 83 & 84.

⁹³ Veto Message for Senate Bill 2000, 2011-2012 General Appropriations Act, pp. 83 & 84.

would also have provided transportation services for patients needing treatment and would have provided financial assistance for prescription medications.

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