Annual Drinking Water Quality Report

(Lajes Field water system July 2009 – June 2010)

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We're pleased to present to you this year's Annual Drinking Water Quality Report. This report is designed to inform you about the quality of water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water.

Our water source is groundwater pumped from seven active wells that come from deep basal aquifers. The water is treated before entering the distribution system with a disinfectant to protect against microbial organisms. Additionally, the water is treated through a nano-filtration system to improve water quality. 65 CES Utilities maintains the water distribution system and its treatment process.

The Lajes Field drinking water system is routinely monitored for contaminants according to Environmental Protection Agency (EPA) and Final Governing Standards for Portugal (FGS-P) contaminant limits. This report covers the results of our monitoring for the period of July 2009 to June 2010. As water travels over the land or underground, it can pick up naturally occurring or man-made substances or contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. It's important to remember that the presence of these contaminants **does not** necessarily pose a health risk.

The table below represents the contaminants that were sampled for during the past year. Items in bold are noted as areas of concern and are better described following the table. Also, below you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in $10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Millisieverts per year (mSv/yr) - measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level (MCL) - The “Maximum Allowed” is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TESTING AND ANALYSIS RESULTS						
Contaminant	**Violation Y/N**	**Level Detected**	**MCLG**	**MCL**	**Unit Measurement**	**Likely Source of Contamination**
Microbiological Contaminants						
1. Total Coliform Bacteria	N	Absent	0	Presence of coliform bacteria in 5% of monthly samples	Present/ Absent	Naturally present in the environment
2. Fecal coliform and *E. Coli*	N	Absent	0	A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Present/ Absent	Human and animal fecal waste
Radioactive Contaminants						
3. Total Alpha	N	<0.05	0	0.1	Bq/L	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation
4. Total Beta	N	<0.2	0	1.0	Bq/L	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation
5. Tritium	N	<10	0	50	Bq/L	Erosion of natural deposits
6. Total indicative dose	N	0.030	0	0.10	mSv/yr	Erosion of natural deposits
Inorganic Contaminants						
7. Aluminum	N	<0.06	n/a	0.2	mg/L	Erosion of natural deposits
8. Ammonium	N	<0.05	n/a	0.5	mg/L	Erosion of natural deposits
9. Antimony	N	<0.002	0.006	0.005	mg/L	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
10. Arsenic	N	<0.002	0	0.01	mg/L	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
11. Asbestos	N	<0.17	7	7	MFL	Decay of asbestos cement water mains; erosion of natural deposits
12. Barium	N	0.005	2	2	mg/L	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
13. Beryllium	N	<0.0002	0.004	0.004	mg/L	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries

14. Boron	N	<0.2	1	1	mg/L	Erosion of natural deposits
15. Bromate	N	<0.005	0	0.010	mg/L	Disinfection byproducts form when disinfectants added to drinking water to kill germs react with naturally-occurring organic matter in water
16. Cadmium	N	<0.0004	0.005	0.005	mg/L	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
17. Chlorides	N	50	250	250	mg/L	Disinfection byproducts form when disinfectants added to drinking water to kill germs react with naturally-occurring organic matter in water
18. Chromium	N	0.01	0.05	0.05	mg/L	Discharge from steel and pulp mills; erosion of natural deposits
19. Copper	**Y**	**4.1**	**1.3**	**1.3**	**mg/L**	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
20. Cyanide	N	<0.01	0.05	0.05	mg/L	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
21. Fluoride	N	0.73	1.5	1.5	mg/L	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
22. Iron	**Y**	**0.5**	**n/a**	**0.2**	**mg/L**	Naturally in rivers, lakes, and underground water
23. Lead	**Y**	**0.12**	**0**	**0.015**	**mg/L**	Corrosion of household plumbing systems, erosion of natural deposits
24. Manganese	N	0.015	n/a	0.05	mg/L	Sources of pollution rich in organic matter can add to the background level by increasing manganese release from soil or bedrock into groundwater.
25. Mercury (inorganic)	N	<0.00005	0.001	0.001	mg/L	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
26. Nickel	N	0.005	0.02	0.02	mg/L	Erosion of natural deposits
27. Nitrate (as Nitrogen)	N	29	50	50	mg/L	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
28. Selenium	N	0.002	0.01	0.01	mg/L	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
29. Sodium	N	51	n/a	200	mg/L	Erosion of natural deposits as water moves through soil and rock
30. Sulfate	N	42	n/a	250	mg/L	Erosion of natural deposits as water moves through soil and rock
31. Thallium	N	<0.0002	0.0005	0.002	mg/L	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Synthetic Organic Contaminants (including Pesticides and Herbicides)						
32. 2,4-D	N	<0.00002	0.0001	0.0001	mg/L	Runoff from herbicide used on row crops
33. 2,4,5-TP (Silvex)	N	<0.00001	0.0001	0.0001	mg/L	Residue of banned herbicide
34. Alachlor	N	<0.00003	0	0.0001	mg/L	Runoff from herbicide used on row crops
35. Aldrin	N	<0.00001	n/a	<0.00003	mg/L	Runoff from insecticides
36. Aldicarb	N	<0.00002	n/a	0.0001	mg/L	Runoff from herbicide used on row crops

37. Aldicarb Sulfone	N	<0.00005	n/a	0.0001	mg/L	Runoff from herbicide used on row crops
38. Aldicarb Sulfoxide	N	<0.00002	n/a	0.0001	mg/L	Runoff from herbicide used on row crops
39. Atrazine	N	<0.00003	0.0001	0.0001	mg/L	Runoff from herbicide used on row crops
40. Benzo(a)pyrene (PAH)	N	0.000002	0	0.0001	mg/L	Leaching from linings of water storage tanks and distribution lines
41. Carbofuran	N	<0.00002	0.0001	0.0001	mg/L	Leaching of soil fumigant used on rice and alfalfa
42. Chlordane	N	<0.00002	0	0.0001	mg/L	Residue of banned termiticide
43. Dalapon	N	<0.0001	0.0001	0.0001	mg/L	Runoff from herbicide used on rights of way
44. Deildrin	N	<0.00001	n/a	0.00003	mg/L	Runoff from insecticides
45. Di(2-ethylhexyl) adipate	N	<0.00001	0.4	0.4	mg/L	Discharge from chemical factories
46. Di(2-ethylhexyl) phthalate	N	<0.00001	0	0.006	mg/L	Discharge from rubber and chemical factories
47. Dibromochloropropane	N	<0.00001	0	0.0001	mg/L	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
48. Dinoseb	N	<0.00002	0.0001	0.0001	mg/L	Runoff from herbicide used on soybeans and vegetables
49. Diquat	N	<0.00001	0.0001	0.0001	mg/L	Runoff from herbicide use
50. Endothall	N	<0.00001	0.0001	0.0001	mg/L	Runoff from herbicide use
51. Endrin	N	<0.00002	0.0001	0.0001	mg/L	Residue of banned insecticide
52. Glyphosate	N	<0.00001	0.0001	0.0001	mg/L	Runoff from herbicide use
53. Heptachlor	N	<0.00002	0	0.00003	mg/L	Residue of banned termiticide
54. Heptachlor epoxide	N	<0.00003	0	0.00003	mg/L	Breakdown of heptachlor
55. Hexachlorobenzene	N	<0.00001	0	0.0001	mg/L	Discharge from metal refineries and agricultural chemical factories
56. Hexachlorocyclo-pentadiene	N	<0.00001	0.0001	0.0001	mg/L	Discharge from chemical factories
57. Lindane	N	<0.00002	0.0001	0.0001	mg/L	Runoff/leaching from insecticide used on cattle, lumber, gardens
58. Methoxychlor	N	<0.00005	0.0001	0.0001	mg/L	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
59. Oxamyl [Vydate]	N	<0.00001	0.0001	0.0001	mg/L	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
60. PCBs [Polychlorinated biphenyls]	N	<0.000002	0	0.0001	mg/L	Runoff from landfills; discharge of waste chemicals
61. Pentachlorophenol	N	<0.00006	0	0.0001	mg/L	Discharge from wood preserving factories
62. Picloram	N	<0.00005	0.0001	0.0001	mg/L	Herbicide runoff
63. Simazine	N	<0.000045	0.0001	0.0001	mg/L	Herbicide runoff
64. Toxaphene	N	<0.0001	0	0.0001	mg/L	Runoff/leaching from insecticide used on cotton and cattle
65. Total Pesticides	N	<0.00005	n/a	0.0005	mg/L	Runoff/leaching from herbicide and pesticides used on row crops
Volatile Organic Contaminants						
66. Benzene	N	<0.0005	0	<0.001	mg/L	Discharge from factories; leaching from gas storage tanks and landfills

67. Carbon tetrachloride	N	<0.0005	0	0.005	mg/L	Discharge from chemical plants and other industrial activities
68. Chlorobenzene	N	<0.0005	0.1	0.1	mg/L	Discharge from chemical and agricultural chemical factories
69. 1,2 - Dichloroethane	N	<0.0005	0	0.003	mg/L	Discharge from industrial chemical factories
70. cis-1,2- ichloroethylene	N	<0.0005	0.07	0.07	mg/L	Discharge from industrial chemical factories
71. trans - 1,2 - Dichloroethylene	N	<0.0005	0.1	0.1	mg/L	Discharge from industrial chemical factories
72. Ethylbenzene	N	<0.0005	0.7	0.7	mg/L	Discharge from petroleum refineries
73. PCE	N	<0.0005	0	0.001	mg/L	Discharge from dry cleaners
74. Styrene	N	<0.0005	0.1	0.1	mg/L	Discharge from rubber and plastic factories; leaching from landfills
75. 1,2,4 - Trichlorobenzene	N	<0.0005	0.07	0.07	mg/L	Discharge from textile-finishing factories
76. 1,1,1 - Trichloroethane	N	<0.0005	0.2	0.2	mg/L	Discharge from metal degreasing sites and other factories
77. 1,1,2 -Trichloroethane	N	<0.0005	0.003	0.005	mg/L	Discharge from industrial chemical factories
78. TTHM [Total trihalomethanes]	N	<0.0026	n/a	0.10	mg/L	Disinfection byproducts form when disinfectants added to drinking water to kill germs react with naturally-occurring organic matter in water
79. Toluene	N	<0.0005	1	1	mg/L	Discharge from petroleum factories
80. Vinyl Chloride	N	<0.0005	0	0.0005	mg/L	Leaching from PVC piping; discharge from plastics factories
81. Xylenes	N	<0.0005	10	10	mg/L	Discharge from petroleum factories; discharge from chemical factories

Inorganic Contaminants:

(19) Copper - Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

(22) Iron - The ingestion of large quantities of iron can damage blood vessels, cause bloody vomitus/stool, and damage the liver and kidneys, and even cause death. However, because ingestion is regulated, body tissues are generally not exposed to high-level concentrations.

(23) Lead - Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

What does this mean?

The table shows that our system uncovered some problems this year. The duration of the Lead and Copper violation at the DoDD School was June 2009 to May 2010. Upon discovery that certain taps were at potentially unsafe levels, all of the affected taps were disabled had signs indicating that the water was non-potable placed on them, negating the potential for consumption by children or staff. Granular activated carbon filters have been installed on the affected taps and we are evaluating their effectiveness to mitigate this hazard. The potential adverse health effects for prolonged consumption of water with lead contamination above the action level are different depending on the age of the consumer. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development or show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

In addition, an elevated level of iron was found during sampling at building T-709 room 108. Iron and copper are listed as National Secondary Drinking Water Regulations (NSDWR or secondary standards). These are non-enforceable guidelines regulating contaminants that do not pose health effects, but may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants as well as more detailed information regarding the above contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

If you have any questions or would like additional copies of this report, please contact the Bioenvironmental Engineering Element, Capt Michael Salyer or SSgt Brent Jnofinn at 295-57-6206 or DSN 535-6206.