

Response to the Report of the Environmental
Working Group on ECUA Water, by
Larry Walker, December 28, 2009

Foreword

Response to the recent viewpoint presented by the Environmental Working Group (EWG) is difficult, due to the technical nature of the subject matter. In this response, I do the best I can to strike a balance between (a) simplification and clarity, on one hand, and (b) adequate response, on the other hand. If my response seems either too little or too much, my apology.

This response is being sent to everyone who has emailed me about the EWG report. This response is not tailored to any particular person, and I ask forgiveness in advance if it does not adequately respond to your particular message to me. As time permits, I will re-read each message and possibly will respond more personally to individual messages.

The EWG Report

The EWG. The Environmental Working Group is an environmental advocacy group at the national level. Its website is www.ewg.org. It is not one of the nation's better-known environmental advocacy groups, but it enjoys the financial support of several prominent foundations (e.g., Ford Foundation, Pew Charitable Trust) that are not known for supporting "wacko" interest groups. It has been active since 1993, perhaps earlier under another name.

The bulk of EWG's work has had to do with food safety. It has challenged the use of agricultural pesticides and has promoted the consumption of "organic" foods. EWG was a major contributor to the false scare about contamination of apples by the chemical Alar in 1999.

EWG's Water-Quality Report. On December 13, 2009, the EWG posted a report entitled "Tests Find Hundreds of Pollutants in U. S. Tap Water" (see <http://www.ewg.org/kid-safe-chemicals-act-blog/2009/12/tests-find-hundreds-of-pollutants-in-u-s-tap-water/>). The full report may be found at <http://www.ewg.org/tap-water/fullreport>. The main points of the story appear to be the following:

- A total of 316 "contaminants" were reported as present in one or more public water systems in the years 2004-2008

- Of these 316 contaminants, 114 are regulated by the U.S. Environmental Protection Agency (EPA), and 202 are not regulated
- EPA should expand the number of contaminants that it regulates
- EPA also should review the standards that it has set for the 114 already-regulated contaminants

Summary data posted by EWG regarding ECUA were, as follows:

- 101 contaminants were tested for by ECUA.
- 21 contaminants were found at levels below EPA legal limits but higher than EWG's specified "health guidelines."
- On one hand, 21 chemicals were found to exceed "health guidelines": On the other hand, zero chemicals were found to exceed "health standards." The difference is not clear to me.
- 24 other contaminants were detected in ECUA water at levels below both EPA legal limits and EWG health guidelines.
- 56 chemicals were not detected at all in ECUA water.

Here is the table from the EWG report containing information about ECUA water:

	This Drinking Water System	National Average
Exceed Health Guidelines	21 chemicals	4
Health Standard Exceedences	0 chemicals	0.5
Pollutants Found	45 chemicals	8
Tests Conducted	74,897tests	420

Subsequently, EWG posted a ranking of 100 major water utilities, in which “Pensacola water” from the Emerald Coast Utilities Authority (ECUA) was identified as the lowest-rated water of these 100 major utilities. To put it another way, EWG identified ECUA water as the most polluted water of these 100 major utilities. (See http://www.ewg.org/files/EWG_rated-utilities.pdf for the listing.)

EWG states that it based its comparisons on three criteria (see www.ewg.org/tap-water/methodology):

- “Total number of chemicals detected since 2004” (stated weight of 0.3)
- “Percentage of chemicals found of those tested” (stated weight of 0.2)
- “Highest average level for each pollutant” (stated weight of 0.5)

The fact is that, without more details from EWG, the ranking methodology used by EWG cannot either be fully understood or be duplicated; however, it appears that the criterion with the greatest actual weight (as contrasted to the stated weights) was the first criterion, “total number of chemicals detected since 2004.” The following points suggest that “total number of chemicals detected” may be, in fact, the unintended weightiest factor in EWG’s relative ranking of the 100 big suppliers:

- For each of the 100 large water suppliers, the “total number of chemicals detected” is provided in EWG’s 100-supplier listing. ECUA has the highest (worst) number of chemicals detected, of the 100 largest water suppliers. It seems plausible that the number of chemicals detected would affect the third criterion, in that an undetected chemical would produce a “highest average level” for that pollutant of zero.
- The second criterion (see above) appears to be largely a simple reflection of the first criterion. Data concerning it are not included in EWG’s 100-supplier list.
- In reporting on the third criterion, EWG leaves a great deal unsaid; consequently, it is impossible to know how this criterion was actually measured. Even though the third criterion is assigned the greatest weight (0.5) in the ranking system, EWG does not explain clearly this step in its evaluation process.
- The limited amount of information provided by EWG concerning the third criterion suggests no basis for ranking ECUA as worst among the 100 big water suppliers. In its posted listing of the best-to-worst

100 big suppliers, EWG provided each supplier's scores on four specific water ingredients—implying, clearly, that these four are of special importance. The four ingredients and ECUA's scoring on each are, as follows:

- Trihalomethanes (THMs). ECUA is cited as having a THM score of 0.2 ppb. This put ECUA in 2d place among the 100 large utilities. The highest score was 72.0 ppb (Mobile, AL).
- Haloacetic acids (HAAs). ECUA is cited as having a HAA level of 0.6 ppb. This put ECUA in a three-way tie for 2d place among the 100 utilities. The highest score was 51.4 ppb (West Milford, NJ).
- Nitrate. ECUA is cited as having a nitrate level of 1.4 ppb. This put ECUA in a tie for 72nd place. The highest score was 8.4 ppb (Chino Hills, CA).
- Arsenic. ECUA was one of 83 of the 100 large utilities that reported 0.0 ppb of arsenic (thus, in an 83-way tie for 1st place), while 17 utilities reported finding arsenic in their water. The highest score was 7.5 ppb (Chino Hills, CA).

In summary, EWG cited four ingredients as being particularly worrisome as contaminants affecting human health, and on those four ingredients ECUA water ranked in 1st place (tie with many others), 2d place, 2d place (tie), and 72nd place (tie). The rankings on these four ingredients offer little information as to why ECUA water was ranked worst of the 100 large water utilities, in terms of overall quality. The only other datum provided in the published listing is the total number of ingredients detected. On this measure, ECUA had the highest (worst) number (45). This fact suggests that the ranking system was heavily skewed in terms of the total number of ingredients detected.

EWG provides one summary statement about the lowest-rated water suppliers: "All reported many pollutants at levels exceeding government health guidelines."

Flaws in the EWG Analysis. In my opinion, certain flaws are evident in the EWG analysis:

- EWG did not base its comparative judgment on the number of contaminants on which a supplier exceeded EPA legal limits; if it had done so, ECUA's score would have been zero—tied with many other suppliers, undoubtedly, for best in the country.

- EWG did not base its judgment on how often a water supplier exceeded each particular EPA standard. Surely, a contaminant that appears frequently in a water supply is a more serious matter than one that appears rarely. EWG reported that ECUA water contained 39 contaminants, but the published report does not state how often a contaminant was detected. Whether detected one time or 500 times, each detected contaminant counted as one.
- EWG did not take into account the total number of water-sample measurements provided to EPA by each supplier. According to the EWG report summary, ECUA provided nearly 75,000 measurements, while the average number of reported measurements was 420. Does it not stand to reason that a testing regimen of 75,000 measures will produce a greater number of detectable contaminants? Which data suggest the more serious contamination—(a) 45 contaminants observed in 75,000 measurements or (b) say, 10 contaminants observed in 420 measurements?
- EWG did not base its judgment on how many “health limits” a water supplier had exceeded. By that standard, ECUA’s score would have been four. I have not done a comparative analysis, but I think that four would prove to be a relatively good number.

Other Sources

A second-party critique of EWG is provided by an organization named Activist Cash. Activist Cash describes itself as a “pro-consumer” watchdog organization that blows the whistle on advocacy groups that use questionable methods to promote their causes. Activist Cash is strongly critical of EWG. See www.activistcash.com.

Responses to the EWG report on water quality consist of the following, that I know of:

- This present response is my personal response to the EWG report, as one elected member of the Emerald Coast Utilities Authority.
- Responses by ECUA staff may be found on the ECUA website, www.ecua.org.
- The *Pensacola News Journal (PNJ)* provided a sound response to the EWG report in an editorial in its December 20, 2009, edition.
- Chassidy Hobbs, “Coastkeeper” of the local environmental advocacy group, Emerald Coastkeeper, has published a “Viewpoint” on the subject in the December 26, 2009, *PNJ*.

An Alternative Analysis by
The New York Times

The *New York Times* has reported the EWG analysis, with commentary of its own. The *Times* has posted summary data for each major water supplier, also. For Escambia County, Florida see the address, <http://projects.nytimes.com/toxicwaters/contaminants/fl/escambia/fl1170525-emerald-coast-utilities-authority>. The *Times* report was posted on www.nytimes.com on December 16 and appeared in the December 17 print edition of the *Times*. The *Times* report is more straightforward and presents more complete information about ECUA water quality, without EWG's "best" and "worst" listings. The *Times* states that it used data supplied by EWG.

The *Times* summarized data on ECUA water, as follows:

- A total of 101 contaminants were tested for in ECUA water in the five-year period. A contaminant was counted if it was detected in one test (or more) at any detectable level.
- Four contaminants were found at levels below legal limits but above health guidelines
- Forty-one contaminants were found at levels below both legal limits and health guidelines
- Fifty-six contaminants were tested for but not found at all

Another way of summarizing the *Times* data on ECUA is to say that none of the 101 contaminants was found at a level exceeding EPA's legal limits, that only four contaminants were found at levels exceeding EWG's selected "health limits" or "health guidelines" (not sure which), and that 56 contaminants were found not at all.

It may be added, also, that, of the 45 contaminants for which ECUA is cited, 17 were detected three times or less in five years of testing.

Both EWG and the *Times* report that the total data set of ECUA water-quality measurements exceeded 75,000. Twenty-one contaminants were measured approximately 650 times each; others were measured less often.

As noted above, four contaminants were measured at levels exceeding the EWG-specified "health limits." These four components did not exceed EPA legal limits, nor did they exceed "health standards" (?). Here are summaries of information about these four contaminants on which ECUA did worst in the *Times* analysis:

- Water ingredient: Lead. EPA legal limit: 15 ppb. EWG "health limit": 0.20 ppb (1/75th of the EPA legal limit). 35 tests, 7 positive results. Highest single level found in ECUA water: 18 ppb. Average level: 0.24 ppb.

A "positive result" is any detectable measure of the ingredient.

The abbreviation "ppb" stands for "parts per billion." "15 ppb" = 15 parts per billion parts. "0.24 ppb" = 24/100ths of one ppb.

Lead is a naturally occurring ingredient in ground water.

- Water ingredient: Radium-226. EPA legal limit: 5 pCi/l. EWG "health limit": 0.05 pCi/l (1/100th of the EPA limit). 44 tests, 43 positive scores. Highest single level found in ECUA water: 1.50 pCi/l. Average level: 0.69 pCi/l.

The abbreviation, "pCi/l" = "picocuries per liter." A "Curie" ("Ci") is "a unit of measurement of radioactive decay. A "picoCurie" is one-trillionth of a Curie.

Radium-226 is a naturally occurring form of radionuclides that may be detected in ground water due to the natural decay of any matter (logs, leaves, dead plants, dead animals).

- Water ingredient: Radium-228. EPA legal limit: 5 pCi/l. EWG "health limit": 0.02 pCi/l (1/250th of the EPA limit). 44 tests, 40 positive results. Highest single level found in ECUA water: 4.70 pCi/l. Average level: 1.67 pCi/l.

Radium-228 is like Radium-226.

- Water ingredient: Tetrachloroethylene. EPA legal limit: 5 ppb. EWG "health limit": 0.06 ppb (1/80th of the EPA limit). 646 tests, 390 positive results. Highest single level found in ECUA water: 5.10 ppb. Average level: 0.25 ppb.

Tetrachloroethylene is a man-made volatile organic compound that is used in dry-cleaning and in other industrial processes.

It may be noted that three of the four highest-level contaminants in ECUA water are naturally occurring ingredients. This means that they have been in the water of Escambia County's Sand and Gravel Aquifer since time immemorial. As long as humans have drunk water from the Sand and Gravel Aquifer, these ingredients have been consumed, with no apparent harm. Radium-226 and Radium-228 occur naturally everywhere, and lead is present in most waters.

Summaries of some of the other 41 detected components in ECUA water may be provided, also, as illustrations:

- Water ingredient: 1,1,1,2-tetrachloroethane. 642 tests, 2 positive results. EPA legal limit: not specified. EWG "health limit": 70 ppb. Highest level found in ECUA water: 0.11 ppb (that is, 11 one-hundredths of one part per billion, or about 1/700th of the EWG "health limit"). Average of all 642 measures: 0.00 ppb (that is, less than 0.005 ppb and therefore rounded down to 0.00 ppb)
1,1,1,2-tetrachloroethane is a man-made chemical used in metal degreasing and other industrial activities.
- Water ingredient: Monochlorobenzene. 646 tests, 3 positive results. EPA legal limit: 100 ppb. EWG "health limit": 100 ppb. Highest level found in ECUA water: 0.77 ppb (again, less than one ppb). Average of all 646 measures: 0.00 ppb.
Monochlorobenzene is a man-made chemical used in pesticides, in degreasing cleansers, and in other industrial activities.
- Dibromochlormethane. 652 tests, 19 positive results. Legal limit: 80 ppb. EWG "health limit": 60 ppb. Highest level found in ECUA water: 2 ppb. Average of all 652 measures: 0.01 ppb.
Dibromochlormethane is a by-product of the use of chlorine as a disinfectant in water. Chlorine is used near-universally as a disinfectant in potable water supplies.
- Water ingredient: Selenium. 29 tests, 6 positive results. Legal limit: 50 ppb. EWG "health limit": 50 ppb. Highest level found in ECUA water: 1.50 ppb. Average level: 0.12 ppb.
Selenium is a naturally occurring element that contaminates water due to mining, petroleum refining, coal ash from coal-burning power plants, and irrigation of arid farmland soils high in selenium.

Conclusion

Other subtleties of the EWG analysis further invalidate EWG's judgment that "Pensacola" has America's worst water. However, the explanation of them would be a tedious affair for me to compose, I know, and for you to read, I suspect. This response is by no means a complete response to the EWG report, but I choose to stop at this point.

Conclusion

It is my personal conclusion that the EWG report represents flawed data analysis that produced misleading conclusions. I do not believe that ECUA produces the worst water of the 100 big suppliers compared in the EWG report. I do believe that ECUA is a responsible water supplier that produces safe, healthful water.

I hope that you have found my response informative and not a case of--as one writer predicted of any ECUA response--"disinformation at its worst." For the record, I am a professional social scientist, trained at the Ph.D. level in data analysis, data interpretation, and the recognition of data manipulation. The EWG report uses poor evaluation methods, and it fails to adequately explain its data-analysis methods.

Anyone who does not want to take my opinion as sound may go to the original sources of the EWG and of the *New York Times*.

I would welcome responses to this message, pro or con.

END