

# Health Consultation

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UNITED METALS, INCORPORATED  
MARIANNA, JACKSON COUNTY, FLORIDA  
EPA FACILITY ID: FLD098924038

SEPTEMBER 30, 2002

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

## **Health Consultation: A Note of Explanation**

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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**HEALTH CONSULTATION**

**UNITED METALS, INCORPORATED**

**MARIANNA, JACKSON COUNTY, FLORIDA**

**EPA FACILITY ID: FLD098924038**

**Prepared by:**

**Florida Department of Health  
Bureau of Environmental Epidemiology  
Under a Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry**

## Background and Statement of Issues

In January 2002, the United States Environmental Protection Agency (U.S. EPA) asked the Florida Department of Health (DOH) to review the remedial investigation / feasibility study for the United Metals, Inc. facility in Marianna, Jackson County, Florida. The Florida DOH, through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) in Atlanta, Georgia evaluates the public health significance of hazardous waste sites in Florida. This is the first review of United Metals, Inc. by either the DOH or ATSDR.

The United Metals Incorporated (UMI) site is on the east side of state Highway 71 near Simsville in rural Jackson County (Figure 1 and 2). Simsville is approximately 10 miles southeast of Marianna, Florida. Most of this 180-acre site is wooded. Battery recycling operations took place on 24 acres surrounded by a chain-link fence. Five structures currently are located on the site: an office building, a health center, a vehicle maintenance shop, a battery recycling building and a plastic pellet process building.

Farmland, pasture, and undeveloped wetlands surround the site. There are single-family residences within one-half mile to the northeast and southwest of UMI. The site slopes slightly to the south-southwest toward the Chipola River. Patches of bare ground exist around the battery recycling building. Leftover equipment and materials, including plastic chips from the plastic recycling operation, are scattered around the site.

UMI began operations in 1979. From 1979 to 1991 UMI recycled copper, brass, tin, and aluminum. UMI also recycled lead and plastic from auto batteries. They sold the lead and plastic to smelting and extruding facilities. UMI treated 5,000 gallons of acidic wastewater each day using precipitation and neutralization.

The Florida Department of Environmental Protection (DEP), formerly the Florida Department of Environmental Regulation, first investigated the site in 1980 in conjunction with its investigation of the nearby Sapp Battery site. In March 1980 DEP traced metal contamination in Dry Creek to UMI.

Shallow groundwater under the UMI site moves toward the southeast, southwest and northwest, discharging to Dry Creek and eventually into the Chipola River system.

In March 1981, Florida DEP found levels of zinc and lead in the ground water and holding pond water higher than background levels. The pond water was very acidic (pH = 1.5). Florida DEP estimated UMI generated 2,500 to 5,000 gallons of metal-containing acid waste per week from 10,000 to 12,000 car batteries per week. Florida DEP also found elevated levels of lead, zinc, nickel and manganese in the Dry Creek / Chipola River water and sediments immediately down gradient of the site.

In May 1982, U.S. Environmental Protection Agency (EPA) found elevated levels of cadmium in ground water. The EPA also found levels of arsenic, cadmium, chromium, iron, lead, nickel and zinc higher than background levels in the processed waste water. In July 1982 the Florida DEP found elevated levels of cadmium and lead in the holding pond water and ground water. In 1983 UMI dredged and filled in the holding pond.

In July 1986 U.S. EPA discovered between 8,330 to 13,000 milligrams per kilogram (mg/kg) of lead in the soil. UMI ceased operations in 1989.

From 1993 to 1994, U.S. EPA's contractor found elevated levels of aluminum, arsenic, cadmium, chromium, iron, lead, manganese, nickel and vanadium in on-site soil and ground water. They found lead in both on-site and off-site surface soil ranging from 119 to 10,900 mg/kg. Holding pond sediment had maximum levels of arsenic (61 mg/kg), antimony (556 mg/kg) and lead (106,000 mg/kg). Soil from the drainage area west of the site had elevated lead levels. Storm water runoff from UMI drains into Dry Creek and eventually into the Chipola River.

According to 1995 field notes from the FDEP Expanded Site Inspection, holes in the fence and other signs of trespass were observed. The Florida DOH and the Jackson County Health Department (CHD) visited the site in October 2001 and noted the facility's gate was locked and no signs of recent trespass.

### **Discussion**

The Florida DOH compared the soil and ground water analytical data with health-based screening values. Screening values serve to narrow the focus of a health consultation to those contaminants most important to public health. Identification of a contaminant of concern does not necessarily mean that exposure will cause illness.

#### Soil Analytical Results

The maximum concentrations of metals other than antimony, arsenic and lead in both off-site surface soil and on-site stockpiled soil were all below health-based screening values and thus are unlikely to cause any illness. Table 1 shows the maximum antimony, arsenic and lead concentrations in the on-site soil pile and off-site surface soil.

Table 1: Maximum On-site and Off-site Surface Soil Concentrations

Chemical of Concern	Highest Concentration On-Site Soil Pile (mg/kg)	Highest Concentration Off-Site Surface Soil (mg/kg)	Screening Value (mg/kg)
Antimony (Sb)	556	32	Child † 20 Adult † 300
Arsenic (As)	61.3	21	Child ‡ 20 Adult ‡ 200
Lead (Pb)	106,000	10,900	Commercial § 920

† - Reference Dose Media Evaluation Guide - ATSDR comparison value (ATSDR 2001).  
 ‡ - Environmental Media Evaluation Guide - ATSDR comparison value (ATSDR 2001).  
 § - FDEP Soil Cleanup Target Level  
 mg/kg = milligrams per kilogram

Groundwater Analytical Results

The maximum concentrations of metals other than aluminum, arsenic, cadmium, chromium, iron, lead, manganese, nickel and vanadium in on-site ground water were all below health-based screening values and thus are unlikely to cause any illness. Table 2 shows the maximum ground water concentrations for aluminum, arsenic, cadmium, chromium, iron, lead, manganese, nickel and vanadium.

Table 2: Maximum On-site Groundwater Concentrations

Chemical of Concern	Highest Concentration (ug/L)	Screening Value (ug/L)
Aluminum (Al)	450,000	Child ‡ 20,000 Adult ‡ 70,000
Arsenic (As)	40	U.S. EPA * 10
Cadmium (Cd)	501	Child † 2 Adult † 7
Chromium (Cr)	107	Child ‡ 30 Adult ‡ 100
Iron (Fe)	185,000	Commercial § 300
Lead (Pb)	524	Commercial § 15
Manganese (Mn)	14,000	Child † 500 Adult † 2000
Nickel (Ni)	316	Child ‡ 200 Adult ‡ 700
Vanadium (V)	1,400	Child ‡ 30 Adult ‡ 100

† - Reference Dose Media Evaluation Guide (RMEG) - ATSDR comparison value (ATSDR, 2001).  
 ‡ - Environmental Media Evaluation Guide (EMEG) - ATSDR comparison value (ATSDR, 2001).  
 § - FDEP Groundwater Cleanup Target Level (Minimum Criteria Organoleptic)  
 \* - U.S. Environmental Protection Agency Drinking Water Standard  
 ug/L = micrograms per liter

The Florida DOH calculated ingestion and inhalation exposure rates assuming a “worst-case” scenario of 8 hour exposures per day, 365 days per year, for 30 years. Generally, an exposure rate (also called a daily dose) is given in milligrams of chemical per kilogram of body weight per day (mg/kg/day). A milligram is one-thousandth of a gram (a raisin or paperclip weigh about one gram). A kilogram is about two pounds. The DOH assumed that children accidentally ingest 200 milligrams of soil per day, drink 1 liter of water per day, and breathe 1.4 cubic meters of air per hour.

#### Antimony

The Florida DOH assumed exposure to the maximum on-site and off-site soil antimony concentrations, 556 mg/kg and 32 mg/kg, respectively. The DOH found that accidentally ingesting antimony-contaminated soil is not expected to cause any non-cancer illness.

There is insufficient evidence to determine whether or not antimony is a human carcinogen by the oral or inhalation routes of exposure (ATSDR 1992). Antimony was not found in ground water above screening values and therefore is unlikely to cause illness.

#### Aluminum

The Florida DOH assumed exposure to the maximum on-site ground water aluminum concentration, 450,000 ug/L. The DOH found that ingesting aluminum-contaminated ground water is not expected to cause any non-cancer illness.

There is insufficient evidence to determine whether or not aluminum is a human carcinogen by the oral route of exposure. Aluminum was not found in surface soil above screening values and therefore is unlikely to cause illness.

#### Arsenic

The Florida DOH assumed exposure to the maximum on-site and off-site soil concentrations, 61.3 mg/kg and 21 mg/kg, respectively, and to the maximum on-site ground water arsenic concentration, 40 ug/L. The DOH found that accidentally ingesting on-site arsenic-contaminated soil or ingesting on-site arsenic-contaminated ground water at the maximum observed concentration daily for 30 years could increase the risk of stroke for people living on the site.

Accidentally ingesting on-site soil at the maximum observed arsenic concentration daily for 30 years could result in a moderate increased risk for lung cancer for people living on the site. Ingesting on-site ground water at the maximum observed arsenic concentration daily for 30 years could result in a high increased risk for lung cancer for people living on the site (ATSDR 2000).

#### Cadmium

The Florida DOH assumed exposure to the maximum on-site ground water cadmium concentration, 501 ug/L. The DOH found that ingesting on-site cadmium-contaminated ground water daily for 30 years could cause an increase in kidney and blood problems. Also, the 30 year average daily dose of cadmium in on-site ground water was greater than the Lowest Observed

Adverse Effect Level (LOAEL) shown to cause an increase in systolic blood pressure in animals, and greater than the LOAEL shown to cause behavioral alterations in animal studies.

There is insufficient evidence to determine whether or not cadmium is a human carcinogen by the oral route of exposure (ATSDR 1999). Cadmium was not found in soil above screening values and therefore is unlikely to cause illness.

#### Chromium

The Florida DOH assumed exposure to the maximum on-site ground water chromium concentration, 107 ug/L. The DOH found that ingesting chromium-contaminated ground water is not expected to cause any non-cancer illness.

There is insufficient evidence to determine whether or not chromium is a human carcinogen by the oral route of exposure (ATSDR 1999). Chromium was not found in soil above screening values and therefore is unlikely to cause illness.

#### Iron

The Florida DOH assumed exposure to the maximum on-site ground water iron concentration, 185,000 ug/L. The DOH found that ingesting iron-contaminated ground water is not expected to cause any non-cancer illness.

There is insufficient evidence to determine whether or not iron is a human carcinogen by the oral route of exposure. Iron was not found in soil above screening values and therefore is unlikely to cause illness.

#### Lead

The Florida DOH assumed exposure to the maximum on-site and off-site soil lead concentrations, 106,000 mg/kg and 10,900 mg/kg, respectively, and the maximum on-site ground water lead concentration, 524 ug/L. The DOH found that accidentally ingesting on-site and/or off-site lead-contaminated soil or ingesting on-site ground water daily for 30 years could cause a decrease in ALAD enzyme activity in animals. There is no clear indication whether or not this decrease would cause an adverse health effect. The 30 year average daily dose for lead in on-site soil and on-site ground water was also greater than the level reported to cause disruption of conditioned responses and motor activity, decreased motility of spermatozoa, impotence, impaired righting reflex and reversal learning deficit in animal studies.

There is insufficient evidence to determine whether or not lead is a human carcinogen by the oral route of exposure (ATSDR 1999).

#### Manganese

The Florida DOH assumed exposure to the maximum on-site ground water manganese concentration, 14,000 ug/L. The DOH found that ingesting manganese-contaminated on-site ground water daily for 30 years could cause nerve degeneration and altered brain enzymes in



animals. The average daily dose of manganese-contaminated on-site ground water ingested for 30 years could cause mild neurological effects in people, including weakness, speech disturbances and tremors, among other symptoms.

There is insufficient evidence to determine whether or not organic manganese is a human carcinogen by the oral route of exposure (ATSDR 2000). Manganese was not found in soil above screening values and therefore is unlikely to cause illness.

#### Nickel

The Florida DOH assumed exposure to the maximum on-site ground water nickel concentration, 316 ug/L. The DOH found that ingesting nickel-contaminated on-site ground water daily for 30 years could increase the risk of allergic dermatitis (rash), especially among women.

There is insufficient evidence to determine whether or not nickel is a human carcinogen by the oral route of exposure (ATSDR 2000). Nickel was not found in soil above screening values and therefore is unlikely to cause illness.

#### Vanadium

The Florida DOH assumed exposure to the maximum on-site ground water vanadium concentration, 1,400 ug/L. The DOH found that ingesting vanadium-contaminated ground water is not expected to cause any non-cancer illness.

There is insufficient evidence to determine whether or not vanadium is a human carcinogen by the oral route of exposure (ATSDR 1992). Vanadium was not found in soil above screening values and therefore is unlikely to cause illness.

#### Physical Hazards

Although the site is fenced with locking gates, trespass has occurred in the past. There is scattered equipment on the site that could pose a physical hazard to trespassers. Large, open tanks located to the south of the plastic pellet process building contain significant amounts of water that could be a drowning hazard for trespassers.

#### Additional Data Needs

The Florida DOH can not rule out possible exposure to elevated concentrations of contaminants other than heavy metals. The extent of contamination of soil and ground water at the property has not been adequately characterized.

#### Children's Health Section

The ATSDR and the Florida DOH, through the ATSDR's Child Health Initiative, recognize that in communities faced with the contamination of their environment, the unique vulnerabilities of infants and children demand special attention. Children are at a greater risk than are adults for certain kinds of exposure to hazardous substances emitted from waste sites. Because they play outdoors and because they often carry food into contaminated areas, children are more likely to

be exposed to contaminants in the environment. Children are shorter than adults, which means they breathe dust, soil, and heavy vapors close to the ground. They are also smaller, resulting in higher doses of chemical exposure per body weight. If toxic exposures occur during critical growth stages, the developing body systems of children can sustain permanent damage. Probably most important, however, is that children depend on adults for risk identification and risk management, housing, and access to medical care. Thus, adults should be aware of public health risks in their community, so they can accordingly guide their children.

The Florida DOH sampled nearby wells and determined that lead concentrations in some drinking water obtained from groundwater wells were above the 15 ug/ml limit the Department of Environmental Protection has set for lead in drinking water. As a precaution, the Jackson County Health Department tested five local children from some of these homes for blood lead levels. The measured blood lead levels of these children are not likely to cause illness. The Florida DOH evaluated these blood lead samples in a separate consultation (FL DOH 2002).

#### Sensitive Populations

Sensitive populations exhibit a different or enhanced response to contaminants than will most persons exposed to the same level of a contaminant in their environment. Reasons may include genetic makeup, age, health and nutritional status, and exposure to other toxic substances. Potential health effects for sensitive populations were considered, but due to factors discussed in previous sections, as well as a lack of specific information about the current population, no conclusions regarding potential health effects in sensitive populations near this hazardous waste site were generated at this time.

### **Conclusions**

The United Metals Inc. site is categorized as an apparent "Public Health Hazard" because of physical hazards currently located on the site. There is scattered equipment on the site that could pose a physical hazard to trespassers. Large, open tanks located to the south of the plastic pellet process building contain significant amounts of water that could be a drowning hazard for trespassers.

The Florida DOH can not rule out possible exposure to elevated concentrations of contaminants other than heavy metals. The extent of contamination of soil and ground water at the property has not been adequately characterized.

The Florida DOH is not aware of any residents who are currently exposed to site-related contaminants at levels likely to cause an increased risk of illness. If in the future, the site is used for commercial and/or residential purposes, people exposed on a daily basis to on-site soil and/or on-site ground water for 30 years could be at an increased risk of cancer and other illnesses. Possible future exposure pathways and associated health risks are summarized below.

Daily exposure for 30 years to arsenic in on-site soil and on-site ground water could increase the potential for stroke in people living on the site. Daily exposure for 30 years to arsenic in on-site soil could result in an increased risk for lung cancer for people living on the site. Daily exposure for 30 years to arsenic in on-site ground water could result in a high increased risk for lung cancer in people living on the site.

Daily exposure for 30 years to cadmium in on-site ground water could increase the potential for kidney and blood problems, an increase in systolic blood pressure and behavioral alterations in animals.

Daily exposure for 30 years to lead in on-site and off-site soil and on-site ground water could increase the potential for disruption of conditioned responses and motor activity, decreased motility of spermatozoa, impotence, impaired righting reflex and reversal learning deficit in animals.

Daily exposure for 30 years to manganese in on-site ground water could increase the potential for nerve degeneration, altered brain enzymes and mild neurological signs in people.

Daily exposure for 30 years to nickel in on-site ground water could increase the potential for allergic dermatitis (rash) especially for women.

### **Recommendations**

Ensure restricted access to the site. Remove scattered equipment and tanks and/or water in tanks near the plastic pellet process building to reduce the chance of drowning and other hazards to trespassers. These recommendations has been made to the U.S. EPA.

Collect and analyze additional surface soil ( $\leq 3$  inches) and ground water samples to fully characterize the extent of contamination. This recommendation has been made to the U.S. EPA.

### **Public Health Action Plan**

The Florida DOH will continue to assist the Jackson CHD and the U.S. EPA by reviewing additional environmental data as it becomes available.

The Florida DOH has evaluated blood lead data for area children and the results will be released to the public in the form of an Exposure Investigation report.

## References

- ATSDR 1992. Public Health Assessment Guidance Manual (March). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services, Atlanta, GA.
- ATSDR 1998. Guidance on Including Child Health Issues in Division of Health Assessment and Consultation Documents. Agency for Toxic Substances and Disease Registry, Atlanta, GA. July 2, 1998.
- ATSDR 1992. Draft Toxicological Profile for Antimony. Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 2000. Draft Toxicological Profile for Arsenic (Update). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 1999. Draft Toxicological Profile for Cadmium (Update). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 1999. Draft Toxicological Profile for Chromium (Update). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 1999. Draft Toxicological Profile for Lead (Update). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 2000. Draft Toxicological Profile for Manganese (Update). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 2000. Draft Toxicological Profile for Nickel (Update). Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 1992. Draft Toxicological Profile for Vanadium. Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- ATSDR 2001. Comparison Values for Soil and Ground Water. Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- Environmental Protection Agency, 1997. U.S. Environmental Protection Agency. Exposure Factors Handbook, Volumes I, II, and III. EPA/600/P-95/002F a, b, c.
- Florida Department of Environmental Protection, 1999. Development of Soil Target Cleanup Levels, for Chapter 62-777, F.A.C. Prepared for the Division of Waste Management , Florida DEP.
- Florida Department of Health, 2002. Health Consultation, Exposure Investigation, United Metals, Inc.

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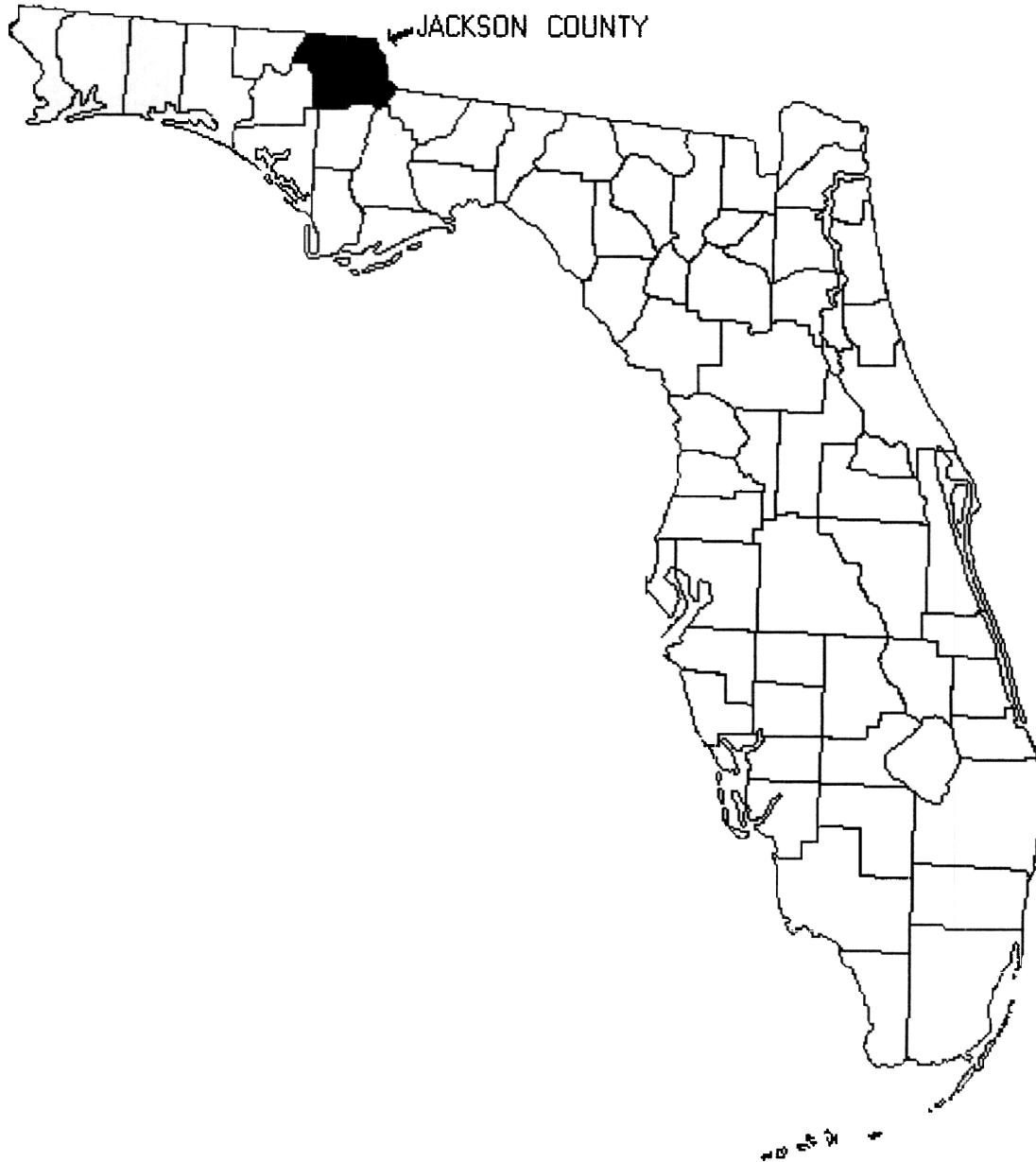
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# Map of Florida



SOURCE: FLORIDA DOH FILES

**Figure 1: Jackson County, Florida**





**FIGURE 2**  
**United Metals, Inc.**  
**Private Well Sample Results**  
**Jackson County, Florida**

Map Prepared By  
Drinking Water Toxics Section  
Bureau of Water Programs  
Florida Department of Health  
April 24, 2002

**LEGEND**

United Metals Facility

Sampled Private Well

No Metals Detected

Metals Detected < MCL or HAL

Metals Detected > MCL or HAL



## Certification

The Florida Department of Health, Bureau of Environmental Epidemiology prepared the United Metals, Inc. (UMI) Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It followed approved methodology and procedures existing at the time it began.



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The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.



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