

ATSDR Agency for Toxic Substances & Disease Registry Public Health
Assessments &
Health Consultations

PUBLIC HEALTH ASSESSMENT

**LITCHFIELD AIRPORT AREA
GOODYEAR, MARICOPA COUNTY, ARIZONA**

APPENDIX

1. Map showing location of the PGA North site.



2. Map showing the location of the Unidynamics plant and contaminated groundwater plume.



3. Photographs of the PGA North site.



Former Unidynamics Facility



Unidynamics thermal oxidizer.



Globe Well #1 and rusted nearby pipes.



Globe #1 and connecting canals.



Continuation of main irrigation canal running along border of fields.



Fallen sign at Globe #1 Well.



Globe Well #2 pumping water with 22 $\mu\text{g/L}$ TCE into irrigation canals. Deep hole in ground
 Globe Well #2 presenting a physical hazard to children especially when canals are dry. Rusted pipes and metal nearby.



Sign on Globe Well #2 warning of contaminated water.



Globe Well #4 and sign warning of contaminated water. More rusted pipe



Holding basin for contaminated irrigation canal water. Note the proximity to nearby houses. Trash indicates that children come down to the area to play. Rusted pump and other debris present a physical hazard to children. This water is pumped to the canals.

present a physical hazard to children. This water has not been tested for PCB or pesticides.



Eastern and western ends of the holding basin where irrigation water enters from canals. These present physical hazards to children especially when the canals are dry as can be seen in left picture. More rusted pipes near western end of basin.

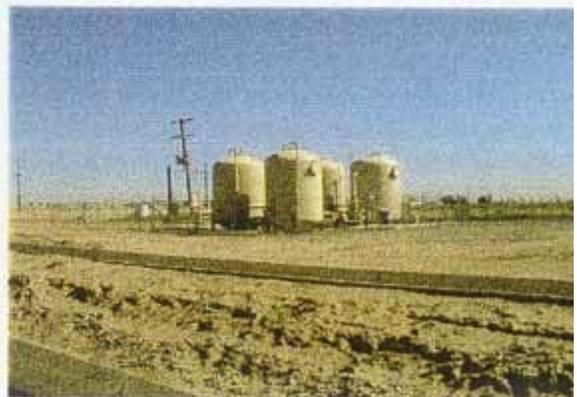


Continuation of inflow pipe from canals into holding basin.

A deep open well next to the holding basin
A child could easily fall into this well.



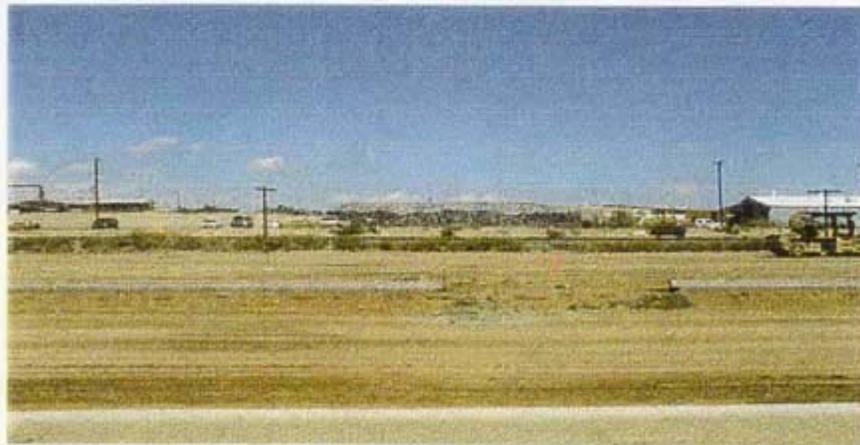
Distance from irrigation canal to nearby Pebble Creek housing development.



SunCor Well #33 A.



IMSAMET Aluminum Plant southeast of the PGA North site and large pile of dross.



Another view of the IMSAMET Plant and large piles of dross.

4. Exposure history forms.

Appendix 4 was not available in electronic format for conversion to HTML at the time of preparation of this document. To obtain a hard copy of the document, please contact:

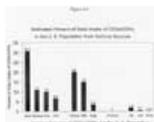
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Attn: Chief, Program Evaluation, Records, and Information Services Branch E-56
1600 Clifton Road NE, Atlanta, Georgia 30333

5. Toxicological profile for TCE.

Appendix 5 was not available in electronic format for conversion to HTML at the time of preparation of this document. To obtain a hard copy of the document, please contact:

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6. Graph displaying various sources of dioxins and furans.



7. Summary of target analytes in Globe and SunCor wells.

Appendix 7 was not available in electronic format for conversion to HTML at the time of preparation of this document. To obtain a hard copy of the document, please contact:

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8. Calculations for exposure doses.

Table A30

Calculation of Estimated TCE concentrations in air from Thermal Oxidizer Emissions

Estimation of outdoor air concentrations (OAC) of trichloroethylene (TCE) from past thermal oxidizer emissions in milligrams per cubic meter (mg/m³):

OAC = E/[w(h)(u)]

Assumptions :	Area of emission (A_e) = 100 square meters (m²)
	Average annual wind speed in Phoenix = 2.6 meters per second (m/sec)
	Highest TCE concentration in emissions data = 59 micrograms per liter (g/L)
	Continual residential exposure to emissions

Where:

E = emission rate into box (0.007 m³/sec)(59 mg/m³) in milligrams per second (mg/sec) = 0.413 mg/sec

w = square root area of box in meters (m) = 10 m

h = height of box in meters (m) = 10 m

u = wind velocity = 2.6 m/sec

OAC = Outdoor air concentration of TCE = 0.0016 mg/m³

ADHS annual air HBGL for TCE = 0.009 mg/m³

9. Definitions of ATSDR Hazard Categories

ATSDR HAZARD CATEGORIES

The ATSDR has designated 5 separate health hazard categories to identify the type and severity of the site-specific hazards identified in the health assessment. The categories are chosen based on the available site-specific data and conclusions of the health assessment. Recommendations and health advisories are made according to the assigned categories.

Category A: Urgent Public Health Hazard

This category is used for sites where short-term exposures (<1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.

Criteria:

Evaluation of available information indicates that site-specific conditions or likely exposures have had, are having, or are likely to have in the future, an adverse impact on human health that requires immediate action or intervention. Such site-specific conditions or exposures may include the presence of serious physical or safety hazards, such as open mine shafts, poorly stored or maintained flammable/explosive substances, or medical devices which, upon rupture, could release radioactive materials.

Actions:

ATSDR will expeditiously issue a health advisory that includes recommendations to mitigate the health risks posed by a site. The recommendations issued in the health advisory and/or health assessment should be consistent with the degree of hazard and temporal concerns posed by exposures to hazardous substances at a site.

Category B: Public Health Hazard

This category is used for sites that pose a public health hazard due to the existence of long-term exposures (>1 yr) to hazardous substances or conditions that could result in adverse health effects.

Criteria:

Evaluation of available relevant information suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants (including radio nuclides) have had, are having, or are likely to have in the future, an adverse impact on human health that requires one or more public health interventions. Such site-specific exposures may include the presence of serious physical hazards, such as open mine shafts, poorly stored or maintained flammable/explosive substances, or medical devices which, upon rupture, could release radioactive materials.

Actions:

ATSDR will make recommendations in the health assessment to mitigate the health risks posed by the site. The recommendations issued in the health assessment should be consistent with the degree of hazard and temporal concerns posed by exposures to hazardous substances at the site.

Category C: Indeterminate Public Health Hazard

This category is used for sites when a professional judgement on the level of health hazard cannot be made because information critical to such a decision is lacking.

Criteria:

This category is used for sites in which "critical" data are insufficient with regard to extent of exposure and/or toxicologic properties at estimated exposure levels. The health assessor must determine, using professional judgement, the "criticality" of such data and the likelihood that the data can be obtained and will be obtained in a timely manner. Where some data are available, even limited data, the health assessor is encouraged to the extent possible to select other hazard categories and to support their decision with clear narrative that explains the limits of the data and the rationale for the decision.

Actions:

Public health actions recommended in this category will depend on the hazard potential of the site, specifically as it relates to the potential for human exposure of public health concern. If the potential for exposure is high, initial health actions aimed at determining the population with the greatest risk of exposure can be recommended.

Category D: No apparent Public Health Hazard

This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.

Criteria:

Evaluation of available relevant information indicates that, under site-specific conditions of exposure, exposures to site-specific contaminants in the past, present, or future are not likely to result in any adverse impact on human health.

Actions:

If appropriate, ATSDR will make recommendations for monitoring or other removal and /or remedial actions needed to ensure that humans are not exposed to significant concentrations of hazardous substances in the future.

Category E: No Public Health Hazard

This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.

Criteria:

Sufficient evidence indicates that no human exposures to contaminated media have occurred, none are now occurring, and none are likely to occur in the future.

Actions:

No public health actions are recommended at this time because no human exposure is occurring, has occurred in the past, or is likely to occur in the future that may be of public health concern.

10. Public Comments

Appendix - Public Comments and Responses

ADHS and ATSDR provided an opportunity in the final draft stage of this document from July 10 through August 31, 2000. Three individuals responded with various comments. The comments received are summarized below along with ADHS responses to those comments.

Comment A:

A former Unidynamics worker wrote complementing EPA, ATSDR, and ADHS on the work done on this project and asked "...has the assessment gone far enough? [they] believe all former workers who were exposed to chemicals at Unidynamics should be interviewed personally...."

Response A:

ADHS appreciates the comment on the work that has been done. ADHS notes that worker health is beyond the authority of ATSDR and ADHS and that no past data were available about specific air quality conditions inside the workplace. Therefore, ADHS has no basis to conduct any further activities with former workers. As stated in Section 5.3, former workers who are concerned about their exposures to the chemicals at the plant are encouraged to see a doctor who is trained in occupational exposures.

Comment B:

A citizen wrote with several specific comments and questions on the Public Health Assessment as follows:

Comment B-1) Conclusions, p.42, #10 - With regard to the three studies and the Cancer Registry not starting operations until 1985, and cancer deaths not reported to the Cancer Registry between 1965 and 1985 and data from that registry used in the final analysis, wouldn't that affect the overall outcome of the study?

Response B-1) : There are three studies discussed in text:

- Mortality in Maricopa County, 1966 - 1986, was based on death certificates (not the cancer registry) and therefore is not affected by the comment.
- Incidence of Childhood Cancer in Maricopa County, 1965 - 1986, does consider years before there was a cancer registry (as noted in the comment), however the authors of the study indicate their methods were an extensive effort to essentially create a cancer registry database for children by gathering appropriate records from hospital files throughout the county. ADHS considers the study to be a correct methodology and finds the results useful.
- Follow-up of Childhood Leukemia Incidence Rates in Maricopa county, 1987-1990, was a study conducted entirely from the cancer registry data and so is not related to the comment.

Comment B-2) Recommendations, p.43, #10 - Regarding notification of future homebuyers of Pebble Creek and SunCor housing...How will EPA or ADEQ inform all future homebuyers that contamination exists? Wouldn't it be reasonable to also inform the current residents of the TCE contamination and the physical dangers to their children?

Response B-2)

ADHS concurs with the comment that it is reasonable to inform current homeowners about the contamination, but ADHS cannot provide the specific details of EPA or ADEQ planned activities. Commenter should contact either of those agencies for details. ADHS does note that the site receives significant coverage in news media (print and broadcast) and newsletters by EPA and ADEQ, all of which should provide reasonable notice to local residents..

Comment B-3) Recommendation #13, p. 44 - Make sure that the in-depth investigation of the contamination at the White Tank dumping area is carried out, new housing developments are being considered for the area.

Response B-3)

Similar to comment 2, specific notification and investigation requirements are carried out by EPA and ADEQ and commenter should contact those agencies for details of their work. ADHS understands that EPA and ADEQ are investigating potential areas of waste disposal and encourages anyone with specific information on waste material or disposal locations to contact ADEQ or EPA. ADHS will provide copies of this Public Health Assessment to EPA and ADEQ for their use in site related investigations.

Comment B-4) Comment comparing statements about lead, chromium, and Volatile Organic Compounds (VOCs) from 1989 Preliminary Public Health Assessment for Phoenix Goodyear Airport to the present document and asking about the chromium and lead cited in 1989 but not listed as hazards in current document.

Response B-4)

The 1989 Preliminary Assessment covered the initial contamination detected in the overall Goodyear airport area, current EPA work (and the current Public Health Assessment) has identified different areas of contamination and is addressing them as two separate areas: PGA- North area and PGA-South area. Chromium discussed in the 1989 document was found at Goodyear Aerospace area which is part of PGA- South area (and therefore is not an issue for the current PGA- North report). Chromium sampling was conducted in the PGA- North area and levels were not of public health concern (see Table 2 in this report).

Lead was found in soils at the Unidynamics site at levels above residential SRL's (see Table 2, this report), but it because the site is fenced and therefore no completed exposure pathway exists, the levels present do not pose any public health hazard. ADHS is aware that EPA and ADEQ are still working with those responsible for clean-up activities to see that lead levels on-site are remediated so that they pose no public health concern if the site area becomes more accessible.

Comment B-5) Recommendation #15, p. 44 - Whose responsibility is it to "encourage former Unidynamics workers who have concerns about their past exposures to discuss these concerns with a doctor..."? According to the Summary, 31 exposure histories were taken from Unidynamics employees..... it may be appropriate for ATSDR to conduct such studies.

Response B-5)

Through public open houses, newspaper articles, and television news coverage, ADHS has provided widespread information about this site and where concerned persons can find more information. EPA and ADEQ also have undertaken many efforts, including newsletter mailings and public meetings, to provide information to all stakeholders concerned about this site. As stated previously in Response A of this appendix, it is outside the scope of ADHS' and ATSDR's authorized activities to conduct a study of worker health related to occupational exposures.

Comment C:

A citizen comment that incorrect information was provided in the Public Health Assessment regarding the wells at the Park Shadows. The comment stated that the Park Shadows wells are being sampled monthly (not quarterly) and that residents were provided copies of the results and the results were also posted on the community bulletin board in the Park Shadows complex.

Response:

See corrected text in final document.

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