

US EPA ARCHIVE DOCUMENT

**HUMAN HEALTH RISK ASSESSMENT
FOR THE ROMIC SOUTHWEST FACILITY
(CHANDLER, ARIZONA)**

Prepared for:

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EXECUTIVE SUMMARY

ES.1 Introduction

Romic Environmental Technologies, Inc. (“Romic”) operates a commercial hazardous waste treatment, storage, and disposal (TSD) Facility (“Facility” or “Site”) in Chandler, Arizona. The Facility is located in the Lone Butte Industrial Park in the Gila River Indian Community. The Site receives waste solvents, antifreeze, wastewater contaminated with solvents and metals (e.g., lead and nickel), and other wastes (e.g., discarded paints and used oil filters). The main operations at the Site consist of recycling waste solvents to produce reusable solvents, blending wastes to produce fuel-grade materials, recycling antifreeze, and treating industrial wastewater.

The United States Environmental Protection Agency (USEPA) will be evaluating the Resource Conservation and Recovery Act (RCRA) Part B permit application for the Site. In support of that permit evaluation, the USEPA has requested that Romic prepare a human health risk assessment (HRA). The purpose of the HRA is to evaluate potential adverse effects to human populations that are at or around the Facility and that could be exposed to chemical emissions from the Site. This report presents the methodology and results of the HRA.

Table ES.1 summarizes the estimated health risks calculated in this HRA. The results of the HRA show that the estimated lifetime incremental cancer risks are less than 2×10^{-5} for all populations evaluated. This estimated cancer risk is within the acceptable risk level used by the USEPA for hazardous waste sites (1×10^{-4} to 1×10^{-6}). The chronic noncancer hazard indices (HIs) calculated in this risk assessment were below one for all populations evaluated. According to USEPA, individual chemical exposures that yield a HI of less than 1 are not expected to result in adverse noncancer health effects (USEPA 1989). Although the calculated acute HI is slightly higher than one, based on the conservativeness in this evaluation, a HI of greater than one is unlikely to occur at the Site. Based on the results of the risk assessment, no significant chronic or acute health effects are expected for the off-site populations evaluated.

ES.2 Site Description

Romic is a hazardous waste management services company. Their TSD Facility in Chandler, Arizona is located at 6760 West Allison Road.

Industrial wastes are currently shipped to the Facility for recycling and treatment from various industries, including:

- Dry cleaning
- Printing
- Electronics
- Aerospace
- Paint
- Automotive

In addition, the Facility receives household hazardous waste (e.g., motor oil, paints, cleaners, etc.) from household waste collection events.

Potential sources of emissions associated with normal operations at the Facility can be divided into four main categories:

1. stack/exhaust point emissions,
2. storage emissions from tanks,
3. fugitive (not caught by a capture system) emissions related to transfer and storage operations, and
4. fugitive emissions from miscellaneous operations.

Each source of emissions was evaluated in the HRA.

ES.3 Human Health Risk Assessment

The Site is located in the Lone Butte Industrial Park in the Gila River Indian Community, in Maricopa County, Arizona. Adjacent to the Facility is Lumber Products, a manufacturer of wood products for the building industry. South of the Facility is a warehouse for a modular closets manufacturer, Classy Closets. Next to this is Stericycle; a medical waste autoclave operation. Southwest of the Facility is a tool manufacturing plant for Ryobi. The Lone Butte (Gila River Indian Community) Casino is approximately one kilometer west of the Facility.

The Gila River Indian Community has a population of approximately 14,000¹. The nearest residences on the reservation are approximately two kilometers to the east of the Site. The nearest residences off the reservation are in the City of Chandler, approximately two kilometers north of the Facility.

Based on the land use surrounding the Site, this risk assessment evaluated off-site workers and off-site residents. Potential risks to off-site workers and off-site residents have been estimated at actual worker and residential locations. In addition to the above populations, the risk assessment also evaluates the risk at specific locations including schools, daycare centers, health care facilities, and senior homes in the vicinity of the Site.

The risk assessment analyzes the emissions from the Site from operations as described in the facility's Part B Permit application. Since emissions include only volatile chemicals, the only relevant exposure route would be inhalation. Because deposition of volatile chemicals will be insignificant, direct contact pathways (such as dermal contact and soil ingestion) and indirect contact pathways (ingestion of contaminated vegetables/meats/fish and mother's milk) are not quantitatively evaluated in the risk assessment.

For this HRA, exposure assumptions corresponding to both an average exposed individual (AEI) and a reasonable maximum exposure (RME) scenario were developed. Intake assumptions for the average exposure scenario are selected to represent the best estimate of exposure while the intake assumptions for the RME scenario represent "the highest exposure that is reasonably expected to occur at a site" (USEPA 1989). According to the USEPA, the intent of the RME

¹ Inter Tribal Council of Arizona, Inc. http://www.itcaonline.com/tribes_gila.html

scenario is “to estimate a conservative exposure case (i.e., well above the average case) that is still within the range of possible exposures” (USEPA 1989). The RME is estimated by combining “upper-bound and mid-range exposure factors so that the result represents an exposure scenario that is both protective and reasonable; not the worst possible case” (USEPA 1991).

In order to estimate the ambient air concentrations, emissions of chemicals from the Site were estimated and the dispersion of the emissions in the air was modeled. The Industrial Source Complex Short Term Version 3 (ISCST3) dispersion model was used to estimate off-site ambient air concentrations at the selected receptors.

The estimated risks in this assessment are based primarily on a series of conservative assumptions related to predicted environmental concentrations, exposure, and chemical toxicity. The use of conservative assumptions tends to produce upper-bound estimates of risk. Although it is difficult to quantify the uncertainties associated with all the assumptions made in this risk assessment, the use of conservative assumptions is likely to result in substantial overestimates of exposure, and hence, risk.

ES.3.1 Chronic Health Effects

Estimating cancer risks and noncancer HIs requires information regarding the level of intake of the chemical and the relationship between intake of the chemical and its toxicity as a function of human exposure to the chemical. The methodology used to derive the cancer risks and noncancer HIs for the selected chemicals is based on guidance provided by USEPA. The potential risk associated with a chemical in air can be estimated using equations that describe the relationships among the estimated intake of Site-related chemicals, toxicity of the specific chemicals, and overall risk for carcinogenic and noncarcinogenic health effects. For carcinogenic effects, the relationship is given by the following equation (USEPA 1989):

$$\text{Risk} = I \times \text{CSF}$$

Where:

Risk = Cancer Risk; the probability of an individual developing cancer as a result of exposure to a particular cumulative dose of a potential carcinogen (unitless)

I = Intake of a chemical (mg chemical/kg body weight-day)

CSF = Cancer Slope Factor (mg chemical/kg body weight-day)

ES.3.2 Acute Health Effects

No individual chemical or source exceeded an acute HQ of one (1). The maximum HI, assuming all maximum one hour concentrations occurred at the same time would be 1.6, just slightly above the noncancer target level. The major chemical contributors to this HI are acetone (0.60 from lab packs), methylene chloride (0.32 from multiple sources), and alcohol (0.22 from lab packs). As a conservative assumption, it was assumed that all alcohol emissions from the Site were 2-propanol or isopropyl alcohol.

The individual source with the largest estimated acute HI is labpacks; with an acute HI of 0.86. Again, this is a very conservative estimate as it assumes all chemicals potentially present in lab packs are present at the same time and that the operation takes an entire hour, which is unlikely.

Based on the conservativeness in this evaluation, a HI of greater than one is unlikely to occur at the Site.

ES.3.3 Occupational Standards

Area and personal air sampling results were used to evaluate potential inhalation exposures to on-site workers. The sampling results were compared with the Permissible Exposure Limits (PELs) derived by the Occupational Safety and Health Administration (OSHA). A worker's exposure to a chemical in a workday, expressed as an eight-hour time weighted average concentration, must not exceed the PEL for that chemical. All sampling results were below the chemical-specific PELs.

ES.4 Conclusions

A summary of the cumulative cancer risks calculated in this risk assessment show that the estimated lifetime incremental cancer risks are less than 2×10^{-5} for all populations evaluated. This estimated cancer risk is well within the acceptable risk level used by the USEPA for hazardous waste sites (1×10^{-4} to 1×10^{-6}).

For noncancer health hazards, a target HI of one (1) is identified. Individual chemical exposures that yield HIs of less than 1 are not expected to result in adverse noncancer health effects (USEPA 1989). The chronic HIs calculated in this risk assessment are below one for all populations evaluated. Although the calculated acute HI is slightly higher than one, based on the conservativeness in this evaluation, a HI of greater than one is unlikely to occur at the Site.

Based on the results of the risk assessment, no significant chronic or acute health effects are expected for the off-site populations evaluated. In addition, based on previous on-site worker sampling results, no occupational standard exceedences are expected.

ES.5 References

United States Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part A)*. Interim Final. Office of Emergency and Remedial Response. EPA-540/1-89/002. Washington, D.C. December.