

Environmental Justice Screening Evaluation: Alba UIC Well
September 27, 2007

Background: permit application.

The Beeland Group LLC has applied to EPA and MDEQ for permits to build a newly drilled Class I non-hazardous injection well located in Michigan, Antrim County, T30N, R5W, Section 14, SE Quarter Section, to dispose of treated, contaminated groundwater from the cleanup of the Little Traverse Bay CKD Release Site in Bay Harbor, Michigan. EPA and MDEQ held a public meeting and hearing on the proposed permits on June 13 at the Alba Public School Gymnasium; with the public comment period ending June 27, 2007. EPA extended this deadline to July 27, 2007.

If approved, the permit would only allow the disposal of non-hazardous, liquid waste. The company proposed to send the wastewater deep underground, more than 1,000 feet below the closest source of drinking water. The well would be located a quarter mile west of the intersection of Alba Highway/County Road 42 and Patterson Road.

Background: environmental justice assessment.

EPA's Toolkit for Assessing Potential Allegations of Environmental Injustice ("Toolkit") serves as a reference guide to help Agency personnel assess potential allegations of environmental injustice. As stated in the desk reference for this Toolkit:

Because of the infinitely variable nature of environmental justice problems and stakeholders, as well as the resources available to address any particular situation, neither this document nor the complete Toolkit are intended to mandate an assessment or actions to be taken in each situation. Rather, they are intended to promote a common understanding and provide a flexible framework for assessing and addressing such situations.

This framework involves four phases:

Phase 1 - Problem Formulation

Phase 2 - Data Collection

Phase 3 - Assessment of the Potential for "Adverse" Environmental and Human Health Effects or Impacts

Phase 4 - Assessment of Potential for "Disproportionately High and Adverse" Effects or Impacts

Environmental justice assessment of the proposed UIC well.

This assessment follows the Toolkit framework, combining Phases 3 and 4 for the sake of clarity.

Phase 1: Problem Formulation

The context of this assessment is the draft permit identified above. Some comments that were received during the public hearing and public notice period on this draft permit raised concerns about environmental justice, including:

- 1) Concern that the decision was not based on technical reasons and was influenced by the economic status of proponents of injection well permit;
- 2) Concern that the “rich people from Bay Harbor” expect to dump their toxic water in the “poor people’s backyards”; and
- 3) Question whether environmental justice was being adequately considered and addressed in this permitting decision.

The scope of this assessment is to identify whether the area surrounding the proposed UIC well presents potential environmental justice concerns that should be the subject of further analysis and assessment.

Phase 2 - Data Collection

This assessment uses readily-available data reflecting the range of Environmental Justice Indicators included in the Toolkit: Environmental Indicators; Health Indicators; Social Indicators; and Economic Indicators.

This assessment also relies on the data and analyses on which EPA based its decision to propose this UIC permit.

Phases 3 and 4 - Assessment of the Potential for “Adverse” Environmental and Human Health Effects or Impacts; Assessment of “Disproportionality” in the case of potential “Adverse” effects or impacts.

EPA’s permitting analysis evaluates the potential for adverse environmental and human health effects or impacts from this proposed UIC well. This analysis is discussed in the technical overview of the UIC program, at

<http://www.epa.gov/safewater/uic/pdfs/uic_techovrview.pdf>. As discussed in that document at page 17, to obtain a permit for a new Class I well, an applicant

must provide sufficient data to demonstrate that USDWs will be protected. The key areas of information are: 1) geological considerations used in the well siting and design, especially information on all USDWs penetrated by the injection well; 2) the structural integrity of the well; 3) the specific operational considerations used in well design; 4) information on the status of wells in the area of review that

penetrate the injection zone; and 5) the proposed monitoring of the facility. The monitoring program must consider quantity and quality of injected fluids and existing reservoir conditions. Operators must submit data on all existing and abandoned wells that penetrate the injection zone within the area of review of all newly drilled or converted injection wells. Information that would allow calculation of the injection pressure curve must be submitted. This submittal must detail the casing and cementing information for all wells in the area of review. The Director uses this information to determine if wells in the area of review require corrective action prior to commencement of injection. The applicant must also provide an appropriate demonstration of financial responsibility for operation and closure of the facility.

Michigan Department of Environmental Quality (MDEQ) also permits underground injection wells within the State of Michigan. Although not directly a part of the permit, MDEQ administrative rules require the permittee to develop a secondary containment area, to conduct a hydrological study of the area, and to construct a monitoring well downgradient from the facility that would be monitored on a regular basis.

This technical analysis indicated that all requirements necessary to prevent adverse impacts are met for this proposed UIC well.

Region 5 uses a two-mile radius for area of review for Class I non-hazardous wells. Within the area of review there are approximately 109 wells. Out of the 109 wells there are only four wells that penetrate the injection zone. Three of these wells are disposing of fluid related to oil and gas production. These well have been constructed appropriately and would not likely pose as a conduits for fluid migration. The final well has been plugged and abandoned to the EPA's satisfaction. The zone of endangering influence defines the area where the injection reservoir pressure under the influence of injection activity could cause fluid to move into a USDW. The zone of endangering influence in this case was calculated at 2.99×10^{-9} feet – for practical purposes, zero.

In addition to the permitting analysis, this EJ assessment considers the following available indicators to screen for other adverse effects or impacts that could be in the area surrounding this proposed facility; and to identify whether there may be greater population vulnerability:

> Sociodemographic indicators

Sociodemographic data was collected with EPA's Environmental Justice Geographic Assessment Tool, for radii around the study area of .5 miles, 1 mile, and 2 miles. This data was compared to county and state data.

The data indicates that, for any of these radii, the percent of minority and percent of people below the poverty level are at or below state-level percentages; and are comparable to county-level percentages. The data does not indicate any language or education barriers that might significantly hinder this community's ability to participate

in the decision-making process. It also does not indicate a higher concentration of vulnerable members of the population (children and elderly) than in the comparison populations.

> Compliance indicators:

A review of EPA facility data for zip code 49611 did not indicate any regulated facilities in the Enforcement and Compliance History Online (ECHO) database, at: < <http://www.epa-echo.gov/echo/index.html>>.

> Human health indicators:

County-level infant death rates are available for Michigan at < <http://www.mdch.state.mi.us/pha/osr/InDxMain/Tab3.asp>>. The rate in Antrim County is 4.8, ± 3.8 per 1,000. This is well under the state average of 7.9 ± 0.2 per 1,000.

Cancer rates are available at <http://www.mdch.state.mi.us/pha/osr/Index.asp?Id=4&MainFile=MAINMORT.HTM&BookMark=>.

For Michigan, 3-year average 2004-2006, age-adjusted rate: 190.3 ± 1.5 per 100,000
For Antrim County, 3-year average 2004-2006, age-adjusted rate: 185.5 ± 26.6 per 100,000.

For Michigan, 5-year average 2002-2006, age-adjusted rate: 192.0 ± 1.2 per 100,000
For Antrim County, 5-year average 2002-2006, age-adjusted rate: 181.6 ± 20.7 per 100,000.

In each case, cancer rates in Antrim County are lower than those in the State of Michigan as a whole. This indicates the absence of disproportionate impacts in Antrim County.

> Environmental Indicators:

Criteria air pollutants

Antrim County is in attainment with health-based standards for all the criteria pollutants (ozone, PM-2.5, coarse PM, carbon monoxide, lead, nitrogen oxide, and sulfur dioxide). See < <http://www.deq.state.mi.us/documents/deq-aqd-air-aqe-attainment-by-county-map.htm>>.

Air Toxics: National Air Toxics Assessment (“NATA”) (1999)

This indicator provides a readily-available, nationally consistent indication of environmental risks from air toxics. The data for this assessment is available from < <http://epa.gov/ttn/atw/nata1999/>>. The data examined was for the census tracts that contain and surround the proposed UIC well.

The hazard index (“HI”) (respiratory) is:

Census Tract ID	2000 Population	Major Source HI	Area Source HI	On-Road HI	Non-Road HI	Background HI	Total HI
26009960200	3224	0.0348665	0.0945	0.3379644	0.1188245	0.1684894	0.7544768
26009960700	4580	0.0652256	0.1165166	0.3151449	0.1265414	0.1692898	0.7927311

The hazard index (neurological) is:

Census Tract ID	2000 Population	Major Source HI	Area Source HI	On-Road HI	Non-Road HI	Background HI	Total HI
26009960200	3224	0.0577403	0.0123543	0.0015833	0.0013969	0.0222609	0.0953291
26009960700	4580	0.0006664	0.0058523	0.0013239	0.0014687	0.022342	0.0316551

As stated in the NATA glossary: “aggregate exposures below a HI of 1.0 will likely not result in adverse noncancer health effects over a lifetime of exposure. However, an HI greater than 1.0 does not necessarily suggest a likelihood of adverse effects.” (<http://epa.gov/ttn/atw/nata/gloss1.html>). Therefore, this data does not indicate any adverse noncancer health effects.

The cancer risk (per million) for these census tracts is:

Census Tract ID	2000 Population	Major SOURCE CANCER RISK	Area Source Cancer Risk	On-Road Cancer Risk	Non-Road Cancer Risk	Background Cancer Risk	Total Cancer Risk
26009960200	3224	0.6352574	1.8717549	0.9401078	0.319747	8.5019086	12.268251 (1.23E-05)
26009960700	4580	0.0260292	2.1815792	0.7873265	0.3386762	8.488487	11.821174 (1.18E-05)

Unlike the noncancer “hazard index” measure, cancer risk does not have an adversity threshold, although there are different benchmarks for acceptable risk used in different regulatory contexts. Therefore, the “disproportionality” step of this analysis takes the conservative approach of comparing the census tract cancer risks to multiple comparison areas, to determine whether there could be “disproportionately high and adverse” cancer risks compared to any benchmark. The risk calculated under NATA is at the low end of the range of cancer risks, both nationally and for census tracts in Michigan and Antrim County; and is below the average for each of these comparison areas:

Estimated Risk (*1000000 = risk in a million) for all carcinogens
Percentile Distribution of Risk Across Census Tracts

	5th	10th	25th	Median	Average	75th	90th	95th
Nationwide	1.06E-05	1.32E-05	2.29E-05	3.66E-05	4.15E-05	5.16E-05	7.47E-05	9.34E-05
Michigan Total	1.14E-05	1.46E-05	2.52E-05	4.09E-05	4.07E-05	5.55E-05	6.55E-05	7.53E-05
Antrim County	4.13E-06	8.26E-06	1.22E-05	1.29E-05	1.31E-05	1.38E-05	1.43E-05	1.43E-05

Therefore, whatever the appropriate benchmark for cancer risk in this case, there is no indication of disproportionate distribution of that risk to the study area.

Conclusion

This screening analysis was carried out to ensure that environmental justice concerns are appropriately considered and addressed in the Alba UIC well permitting decision. Based on the data discussed above, this analysis does not indicate the presence of environmental justice concerns that require further evaluation or response in the area of the proposed UIC well.

In particular, the economic status of the population surrounding the proposed UIC well is comparable to that of Antrim County and of Michigan. Further, EPA carried out extensive technical analysis in support of the draft permit, without reference to the economic status of either the permit applicant or the population surrounding the proposed UIC well.

A review of compliance, human health, and environmental indicators did not reveal any potential disproportionately high and adverse impacts on the community surrounding the well, beyond those impacts that were considered and addressed in the course of EPA's permitting analysis. To the contrary, no EPA-regulated facilities were found within the zipcode containing the facility; Antrim County infant mortality and cancer rates are below those for the State of Michigan; national air toxics data indicates no adverse noncancer health effects; and national air toxics data indicates that cancer risk in the census tracts surrounding the proposed UIC well is below Antrim County, Michigan, and national average cancer risks.