

Overview: Chemical Contamination

This section is an article about chemical contamination, which is known to be present both under the Sunoco Gas Station and under the parking lot within the Orr block.

- *Chemical Contamination*

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¾ There is documented chemical contamination under the Orr Block parking lot and also under the Sunoco Gas Station. The chemicals are extremely toxic. They should be monitored throughout any construction. This article describes the nature of the chemicals under the parking lot.

This is my response and review of the issues discovered in a recent Local Tab article, 29 July 2016, by Jonathan Dame: "Developer to address low-level contamination at Newtonville's Orr block"

<http://newton.wickedlocal.com/news/20160729/developer-to-address-low-level-contamination-at-newtonvilles-orr-block>

The article says "...Reportable levels of oil, lead and other hazardous compounds were discovered in soil at Newtonville's Orr block, the proposed site of a 171-unit mixed-use housing development, according to records filed with the state..."

A recent report from Planning and Development Department, dated 9 September 2016, to LUC, regarding PETITION #179-16 & #180-16 NW corner of Washington and Walnut Streets, see pages 17 & 18, which is a memorandum from Mark Investment, LLC (Client), Sanborn, Head & Associates, Inc. (Sanborn Head) outlines Korff's opinion of the current environmental conditions for the proposed re-development at Washington Place in Newtonville. I find this memorandum lacking clarity and accuracy for to be considered reliable. As I hope to show in the information that I have provided in the following.

<http://www.newtonma.gov/civicax/filebank/documents/77617>

The following table references **MassDEP-Site 3-0033577_10May2016:**

http://public.dep.state.ma.us/SearchableSites2/Site_Info.aspx?textfield_RTN=3-0033577&searchType=ALL&CurrentPage=1

Table 1:

Chemicals				
Chemical	Amount Present accd. to MassDEP Report	Units	RCS-1 Reportable Level [mg/kg]	SOIL relative to RCS-1 Limit [%]
BENZO[A]PYRENE	12	MG/KG	2	600 %
BENZO[B]FLUORANTHENE	19	MG/KG	7	271 %
BENZ[A]ANTHRACENE	16	MG/KG	7	229 %
DIBENZ[A,H]ANTHRACENE	2	MG/KG	0.7	286 %
INDENO(1,2,3-CD)PYRENE	8.6	MG/KG	7	123 %
LEAD	220	MG/KG	200	110 %
PHENANTHRENE	26	MG/KG	10	260 %
TPH	1020	MG/KG	1000	102 %

From the Mass DEP site for reportable contaminate concentration levels (see the following link), I have added these reportable RCS-1 levels and percentiles over the allowable level to the two columns on the right.

<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/reportable-concentrations-in-groundwater-and-soil.html>

Please note in the memorandum by Sanborn, Head & Associates, Inc. (Sanborn Head) are issues identified with contamination levels, and this needs to be reviewed with Table 1, Lead and TPH are claimed to be note worthy – These two are not excessively over the maximum limit. But there is no mention of how excessively high the other contaminants and carcinogens are over the maximum. Also, I find it hard to believe that no MassDEP reporting was given for 875 Washington Streets [Sunoco Service Station], since it is also known that this lot is contaminated, as referenced to in the same memorandum. I believe we need more openness with the reporting and data. The reporting needs to include where all the test points are for every lot in the Orr Block Development, and what each set of readings were. Other supporting documentation needs to be provided to verify the veracity of the data: method of testing, certification of instrumentation, etc.

The MassDEP report identifies only two lots in the project. But these lots require truck loads to be removed or remediated, classified as RCS-1. Since these lots are the more accessible lots for testing. I suspect the other lots may have similar readings once the land becomes exposed and could be MassDEP classified as down gradient properties. The Orr Block Property abutters may also be classified as down gradient properties.

From the **Agency for Toxic Substances and Disease Registry (ATSDR) website:**

<http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=25>

...following amounts (in air) of individual PAHs is not likely to cause any harmful health effects

Table 2:

Airborne exposure concentration (mg/m³) relative to human body weight (per kilogram) over long term exposure	Airborne Exposure - Safe Limit * (based on 110 lbs human)	
0.03 mg of pyrene	0.24	mg
0.04 mg of fluoranthene	0.38	mg
0.3 mg of anthracene	0.32	mg
0.06 mg of acenaphthene	TBD	mg
0.04 mg of fluorene	TBD	mg

The EPA data is usually mg/kg of contaminant. Where safe exposure levels tend to be a very small amount [thousands of a mg] over a some period of time. Also to be considered is the variable method of human contact - skin contact, oral/ingestion contact, air/lung contact. The human exposure numbers are probability calculations based on controlled tests. Not an exact scientific method. So later in this report I have identified some Hazardous Substance Fact Sheet Classification summary of these contaminants. I have also referenced many web links to resources regarding these contaminants and the end of this paper.

These land concentrations of contaminants in the MassDEP Report appear to be far in excess of any safe limits, as identified in ATSDR website. (The concentration percentages in the soil are in some cases are more than an order of magnitude greater than designated safe levels). Note that the ATSDR did not clearly state that the ATSDR low mg/kg listed in the excerpt table are truly known safe levels.

Here in the Table 3 below are the same contaminants listed at the Orr Block Project site with a tabulation of hazard classifications [As referenced from the Hazardous Substance Fact Sheets published by NJ Department of Health, see the referenced web-sites for each chemical attached].

Table 3: PAH, Polycyclic Aromatic Hydrocarbons, exposure hazards to humans

Chemical	Human Carcinogen	Air Exposure	Skin Exposure	Ingestion Exposure	General Notes
BENZO[A]PYRENE	Yes	EA-1,EA-2	ES-1	ES-1	EG-1
BENZO[B]FLUORANTHENE	Yes	EA-1,EA-2	ES-1	ES-1	EG-1
BENZ[A]ANTHRACENE	Yes	EA-1	ES-1	ES-1	EG-1
DIBENZ[A,H]ANTHRACENE	Yes	EA-1	ES-1	ES-1	EG-1
INDENO(1,2,3-CD)PYRENE	Yes		ES-1	ES-1	EG-1
LEAD	Yes	EA-3		EI-1	EG-1
PHENANTHRENE	uncertain	EA-1	ES-1	ES-1	EG-1
TPH	Yes	EA-1,EA-2	ES-1	ES-1	EG-1

Table 3N - Notes: PAH, Polycyclic Aromatic Hydrocarbons, hazardous to humans

Note	Description
EG-1	There may be no safe level of exposure to a carcinogen.
EA-1	OSHA limit is 0.2 mg/m ³ average over 8 hours / NIOSH limit is 0.1 mg/m ³ average over 10 hours
EA-2	Exposure to 80 mg/m ³ is immediately dangerous to life and health.
EA-3	OSHA limit is 0.05 mg/m ³ average over 8 hours / NIOSH limit is 0.05 mg/m ³ average over 10 hours
ES-1	When skin contact occurs, most likely over-exposed.
EI-1	Consider to be Teratogen in humans.

These Orr Block site levels are so high that I believe that we need to proceed with extreme caution and need to use correct excavation and removal procedures so as not to expose the entire neighborhood and city to these hazardous substances. The concentrations could pose significant risks to all the neighbors, abutters, local businesses, Newton North High School, churches and the general populations that frequent this village area. Once these contaminants are exposed they can easily become airborne and also can be carried into local establishments and our homes from clothing and shoes.

Agency for Toxic Substances and Disease Registry (ATSDR),

<http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=25>

These are among the worst contaminant that we can have. The list of concerns is so long that I strongly recommend that everyone in Newton review this ATSDR site to see what they are.

Residents should review these important Questions and Answers at this ATSDR site; there are other related questions there that also should be reviewed

- 1.1 What are PAHs?
- 1.2 What happens to PAHs when they enter the environment?
- 1.3 How might I be exposed to PAHs?
- 1.4 How can PAHs enter and leave my body?
- 1.5 How can PAHs affect my health?
- 1.6 Is there a medical test to determine whether I have been exposed to PAHs?
- 1.7 What recommendations has the federal government made to protect human health?

In my opinion, I believe that this site represents a significant environmental challenge and risks for our Newtonville community and our city. This significant cleanup activity will be occurring in the heart of our Newtonville village. Personally, I would prefer not to allow any of these substances to be exposed. The impact on local business will be significant if there are any issues with this contamination. And the possible impact on many personal lives could also be significant – some of these substances can be lethal. Also noted in the memorandum by Sanborn, Head & Associates, Inc. (Sanborn Head) are deed issue restrictions at 875 Washington Streets [Sunoco Service Station], I believe the removal of these restrictions should not be granted – The restrictions were placed there to protect the Newtonville inhabitants and it’s visitors, and these deed restrictions do not to allow any residential buildings at that location.

Due to this contamination, I believe residential housing should be prohibited at this site to protect the inhabitants, and recommend prohibiting this development to have under-ground parking since it would possibly release excessive contaminates into our Newtonville village community while under construction and that mixed-use re-zoning at this site should be not allowed.

Thank you for hearing my concerns.

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Retired Consultant Engineer

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Other related sites:**Reportable Concentrations in Groundwater and Soil**

<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/reportable-concentrations-in-groundwater-and-soil.html>

MassDEP Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil

<http://www.mass.gov/eea/docs/dep/cleanup/laws/backtu.pdf>

Benzo(a) pyrene

<http://apps.sepa.org.uk/spria/Pages/SubstanceInformation.aspx?pid=22>

<http://nj.gov/health/eoh/rtkweb/documents/fs/0207.pdf>

BENZO[B]FLUORANTHENE

<http://nj.gov/health/eoh/rtkweb/documents/fs/0208.pdf>

BENZ[A]ANTHRACENE

<http://nj.gov/health/eoh/rtkweb/documents/fs/0193.pdf>

<http://www.cdc.gov/niosh/ipcsneng/neng0385.html>

DIBENZ[A,H]ANTHRACENE

https://pubchem.ncbi.nlm.nih.gov/compound/Dibenz_a_h_anthracene#section=Top

<https://www.atsdr.cdc.gov/csem/csem.asp?csem=13&po=8>

INDENO(1,2,3-CD)PYRENE

<http://nj.gov/health/eoh/rtkweb/documents/fs/3052.pdf>

LEAD

No amount of lead is safe. Eliminating all lead exposure in our environment is our best course of action.

<https://www.niehs.nih.gov/health/topics/agents/lead/>

PHENANTHRENE

<http://nj.gov/health/eoh/rtkweb/documents/fs/3004.pdf>

THP

<https://www.epa.gov/risk/regional-screening-levels-frequent-questions-may-2016>

Soil lead levels less than 400 mg/kg are generally **safe** for residential use

<https://www.epa.gov/risk/regional-screening-levels-frequent-questions-may-2016#FQ1>

Toxic Substances Portal - Polycyclic Aromatic Hydrocarbons (PAHs)<http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=121&tid=25>

Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs)<http://www.atsdr.cdc.gov/toxprofiles/TP.asp?id=122&tid=25>

HEALTH EFFECTS - Overall Perspective of the Toxicology of Polycyclic Aromatic Hydrocarbons (PAHs)<http://www.atsdr.cdc.gov/toxprofiles/tp69-c2.pdf>

POTENTIAL FOR HUMAN EXPOSURE - Discussion of the Environmental Fate and Potential for Human Exposure to 17 PAHs<http://www.atsdr.cdc.gov/toxprofiles/tp69-c5.pdf>

Polycyclic Aromatic Hydrocarbons in the Soil Sources, Health Effects, Clean-Up Techniques and PAHs at Alameda Point<http://www.stmarys-ca.edu/sites/default/files/attachments/files/PAHgroupproject.doc>

https://www.change.org/suggested?alert_id=tevfEETbIf_Kkh%2BiV9NWWPIjM2qEkNBs24bzdLZDpls%2F7fu3Z94Z4%3D&petition_id=8184860

Half a million kids in the U.S. have elevated levels of lead in their blood – impairing brain development, contributing to learning and behavioral problems and lowering their IQ's. This is a problem that needs to be solved.

Summary of the Clean Air Act

- [PDF of CAA, from U.S. Senate](#) (465 pp, 1.1MB, [About PDF](#))
- The official text of the CAA is available in [the United States Code on FDSys](#), from the US Government Printing Office 42 U.S.C. §7401 et seq. (1970)

<https://www.epa.gov/laws-regulations/summary-clean-air-act>

Summary of the Clean Water Act[PDF of CWA, from U.S. Senate](#) (234 pp, 571K, [About PDF](#))

- The official text of the CWA is available in [the United States Code on FDSys](#), from the US Government Printing Office 33 U.S.C. §1251 et seq. (1972)

EXPERTS CITE TAINTED SOIL, CALL FOR LEGAL PROTECTIONS<http://www.nytimes.com/1986/12/28/weekinreview/experts-cite-tainted-soil-call-for-legal-protections.html>

Mass DEP Site Cleanup Policies & Guidance

<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/site-cleanup-policies-guidance.html>

MCP Numerical Standards – MassDEP

<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/mcp-numerical-standards.html>

Sunoco Service Station - Contamination

Sunoco-

Aug1995_MassDEP_BWSC104_BWSC113_BWSC_114_GESreport_180pages.aspx

<http://public.dep.state.ma.us/fileviewer/DefaultScanned.aspx?documentid=84970>
