

Health Consultation

RESULTS OF AIR EXPOSURE INVESTIGATION

PRIMA ASPHALT CONCRETE INC (PAVCO)

HOLBROOK, SUFFOLK COUNTY, NEW YORK

EPA FACILITY ID: NYD041869645

DECEMBER 13, 2005

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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Prepared by:

New York State Department of Health
Center for Environmental Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Superfund and Program Assessment Branch

BACKGROUND AND STATEMENT OF ISSUES

The New York State Department of Health (NYS DOH) and the Suffolk County Department of Health Services (SCDHS), under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), conducted this Exposure Investigation. The purpose was to help characterize potential health risks associated with exposure to airborne dust from a stockpile of granite aggregate at the PRIMA Asphalt site in Holbrook (Suffolk County) for residents in the adjacent residential communities south of PRIMA.

Site Description and History

The PRIMA Asphalt Inc. site is an 18-acre property located in an industrial zoned area in the Town of Islip, Suffolk County. PRIMA Asphalt is bordered by Furrows Road to the south, Patchogue-Holbrook Road to the west and the Long Island Railroad to the north. Residential communities including *The Colony*, a large, gated residential community, are located south of PRIMA Asphalt on Furrows Road. Several smaller residential neighborhoods border *The Colony* to the east and west. PRIMA Asphalt manufactures and distributes asphalt for road construction from this facility. Raw materials used for manufacture are brought by rail car and stored on-site. In 1998, PRIMA began receiving and stockpiling crushed granite rock tailings from the construction of water tunnel No. 3 in New York City. By the summer of 1999, the pile of material had reached nearly 100 feet in height and covered several acres at its base. The granite rock is composed of various sized granite aggregates including fine dust. Shortly after the stockpiling of material began, residents south of PRIMA along Furrows Rd complained to Town officials that the material was responsible for flooding roadways, runoff from the pile was impacting personal property and fine gray grit was accumulating on homes and other personal property. In November 1999, residents of *The Colony* submitted video footage (to SCDHS) showing dust clouds blowing from the piles and expressed health concerns about the possible inhalation exposure to silica in the dust.

In response to a requirement by the New York State Department of Environmental Conservation (NYSDEC), PRIMA implemented a dust control program at the facility. Pinesap emulsion and water are regularly applied to the storage pile and on-site roads to control fugitive dust. In the year 2001, PRIMA reduced the height of the pile significantly down to about 50 feet.

NYS DOH and SCDHS visited the PRIMA site in January 2000. During that visit, random samples of the crushed rock material were collected from the top and base of the pile and were analyzed microscopically to determine its composition (Wadsworth, 2000). In general, respirable-sized particles less than 5 microns (μm) made up approximately 1%, by weight, in each of the samples. The respirable fraction was further analyzed for composition and determined to be 4% silica from the top of the pile to 24% at the bottom of the pile. Asbestos was not detected in the sample from the top of the pile, but trace amounts of asbestos were identified in the sample from the base of the pile. The amount was determined to be 0.1% by weight of the respirable portion, which is less than the criterion (1% or greater for) for material to be considered asbestos-containing.

These data suggested that crystalline silica might be present in fugitive emissions of respirable particles reaching *The Colony* or other residential areas from the stockpiled material at PRIMA Asphalt, Inc. Crystalline silica was of potential concern since long-term inhalation exposures to it have been associated with pulmonary dysfunction and silicosis, a degenerative fibrogenic lung disease (Schulz 1994). Also, the International Agency for Research on Cancer recently concluded that crystalline silica was a human lung carcinogen under some occupational conditions. The specific conditions of exposure (e.g. types, characteristics of silica), however, have not been clarified.

The appropriate particulate size fraction for assessing whether adverse health effects might be associated with airborne crystalline silica is less than 5 μm . This is the particulate size fraction for crystalline silica that has been associated with silicosis (US EPA 1996; Schultz 1994) and is sometimes termed the “respirable fraction”.

Asbestos was also of potential but lesser concern since long-term inhalation of certain types of asbestos fibers has been associated with asbestosis and cancer. The likelihood of developing these diseases is related to the number of asbestos fibers inhaled as well as the length and diameter of the fibers (Schultz 1994; ATSDR 1999).

To determine if residents south of the PRIMA facility were being exposed to crystalline silica and/or asbestos in fugitive air-borne particulates at levels of public health concern, the NYS DOH, SCDHS and ATSDR developed an air sampling program. Concentrations of airborne particulate matter smaller than 10 μm in diameter (PM_{10}) were also measured because long-term concentrations above 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), measured at area monitors, may aggravate health problems such as asthma (US EPA 1997). Particulate matter is the term used for a mixture of particles commonly found in air and is frequently referred to as dust. PM_{10} refers to particles less than 10 μm in size.

Air samples were collected at an open, centrally located position on *The Colony* property that is approximately 400 yards south (downwind) of the pile of aggregate. Control (upwind) samples were collected at the SCDHS mobile Air Monitoring Station on the grounds of the Sagamore Jr. High School, approximately 1-mile north. Continuous meteorological conditions were also monitored at this location.

RESULTS AND DISCUSSION

Twenty-four hour samples for PM_{10} (total dust less than 10 μm in size), PM_5 (total dust less than 5 μm in size), respirable crystalline silica (less than 5 μm), and asbestos were collected on twelve dates from July 19, 2000 through November 18, 2000. The sampling devices were remotely activated at various times of the day by SCDHS after receiving notification from residents in the area of asphalt odors or visible airborne dust. During this time the PRIMA facility was

operating. Air samples were not collected during rain. During complaint and sampling periods prevailing winds are generally light (approximately 4 mph) and from the north. One sampling

event occurred on September 20, 2000 when strong winds were (> 20 mph) from the south. Respirable crystalline silica was not detected above the detection limit of 0.01 milligrams per cubic meter (mg/m³) in any sample collected at *The Colony* or at the background location (Table 1 below). This detection limit is considerably below the current Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for respirable silica in air of 0.1 mg/m³.

Table 1. Summary of Air Monitoring Data PRIMA/Colony Air Monitoring Study

Date	The Colony				Sagamore Jr. High School (control)				Wind Parameters	
	PM ₁₀ (µg/m ³)	Crystalline Silica (mg/m ³)	Total Dust (mg/m ³) PM5	Asbestos (s/cm ³)	PM ₁₀ (µg/m ³)	Crystalline Silica (mg/m ³)	Total Dust (mg/m ³) PM5	Asbestos (s/cm ³)	Direction	Speed (mph)
7/19/00	17	<0.01	<0.01	NA	NA	<0.01	NA	NA	N	2
8/17/00	NA	<0.01	0.01	<0.0039	16	<0.01	<0.01	<0.0040	VAR	2
8/24/00	33	<0.01	0.03	<0.0039	NA	<0.01	0.03	0.0043	VAR	3
9/6/00	20	<0.01	0.01	<0.0039	NA	<0.01	<0.01	<0.0033	NE	3
9/20/00	29	<0.01	0.02	<0.0039	NA	<0.01	<0.01	<0.0022	SW	4
9/29/00	16	<0.01	0.01	<0.0026	14	<0.01	<0.01	<0.0023	N	3
10/4/00	19	<0.01	0.01	<0.0026	21	<0.01	<0.01	<0.0023	VAR	3
10/12/00	19	<0.01	0.01	<0.0026	18	<0.01	<0.01	<0.0025	VAR	2
10/19/00	13	<0.01	<0.01	<0.0025	12	<0.01	<0.01	<0.0022	VAR	2
10/28/00	NA	<0.01	<0.01	0.0044	NA	<0.01	<0.01	<0.0022	N	High
11/7/00	12	<0.01	<0.01	<0.0025	13	<0.01	<0.01	<0.0021	NW	3
11/18/00	16	<0.01	0.02	<0.0024	15	<0.01	0.02	0.0021	W	3

PM₁₀ – particulate matter which is aerodynamically 10 microns or less in size.

µg/m³ - micrograms per cubic meter of air

mg – milligrams; 1 milligram = 1000 micrograms

mg/m³ – milligrams per cubic meter

s/cm³ – structures per cubic centimeter

ND – not detected

NA – not available or not analyzed

N – North; S – South; E – East; W – West

VAR – Variable AR – Variable

Asbestos fibers were detected in a single sample collected at *The Colony* and in two samples collected at the background location. All three results were at concentrations below the Federal clearance standards for schools of 0.02 structures/cubic centimeter (cm³) defined by AHERA-40 CFR-Part 763 (US EPA) following the completion of asbestos abatement activities. The background location detections reflect the fact that asbestos is a commonly occurring constituent of ambient air. Although asbestos was detected at *The Colony* and at the background location on different days, in neither location did asbestos levels exceed the Federal clearance standard for schools or the range of background levels reported from other studies.

Particulates less than 10 µm (PM10) detected at The Colony were similar to levels collected at the background location. In all cases the levels detected were considerably less than the current US EPA PM10 24-hour standard for area monitors of 150 µg/m³, and the average of all the samples collected was less than the annual average National Ambient Air Quality Standard of 50 µg/m³.

The public was invited to comment on the document during the public comment period which ran from August 8th, 2005 through September 5th, 2005. A response to public comments was prepared to answer area residents' questions on the draft Health Consultation: Results of Air Exposure Investigation Prima Asphalt Concrete Inc. (see Appendix C).

CONCLUSIONS

Based on ATSDR's present public health hazard categories (see Appendix B), the PRIMA Asphalt site has been categorized as "no apparent public health hazard". Exposure to dust emanating from the pile of crushed material is likely to have occurred, but based on the available data, dust does not contain levels of crystalline silica or asbestos that are likely associated with adverse health effects from inhalation. Respirable crystalline silica was not found and asbestos was detected only once at *The Colony* and only twice at the background location, and the levels are below reported background levels.

Residents reported a number of complaints that they related to fugitive dust from the PRIMA site. Although elevated dust levels may have occurred in the past, they were not apparent during this assessment. However, the air sampling results from this study may not characterize the dust levels for short, high wind conditions. Continuous, hourly monitoring would be necessary to evaluate those conditions.

RECOMMENDATIONS

Based on the data collected from July 2000 through November 2000, sampling for crystalline silica or asbestos is no longer warranted. Continuous, total particulate matter (PM₁₀) monitoring will continue by SCDHS for comparison with the US EPA ambient air standards, measured at area monitors.

PUBLIC HEALTH ACTION PLAN

The Public Health Action Plan (PHAP) for PRIMA Asphalt contains a description of actions to be taken by ATSDR and/or the NYS DOH following completion of this exposure investigation. For those actions already taken at the site, please refer to the background section of this document. The purpose of the PHAP is to ensure that this health consultation identifies public health hazards and provides a plan of action designed to mitigate and prevent adverse human health effects resulting from past, present and/or future exposures to hazardous substances at or near the site. Included is a commitment on the part of ATSDR and the NYS DOH to follow-up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR and/or the NYS DOH are as follows:

NYS DOH, in conjunction with SCDHS and ATSDR, completed a health consultation for the Holtsville, Farmingville, Holbrook, and Lake Ronkonkoma Communities, which summarized

odor complaint air sampling dates through June 2003, and described general air quality in the area from 1997 to 2002. This health consultation is being released concurrently with the Prima Asphalt Exposure Investigation.

REFERENCES

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Environmental Protection Agency. 1997. EPA's Revised Particulate Matter Standards Fact Sheet. www.epa.gov/ttn/oarpg/naaqsfm/pmfact.html

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Schulz, C.O. 1994. Silicon and Silicates, Including Asbestos. In: Patty's Industrial Hygiene and Toxicology. Vol. II, Part A. (Eds. Clayton, G.D. and Clayton, F.E.) New York, NY, John Wiley and Sons, Inc.

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CERTIFICATION

The Health Consultation for the Prima Asphalt Concrete Inc (PAVCO) site was prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated. Editorial review was completed by the cooperative agreement partner.

Technical Project Officer, CAT, SPAB, DHAC

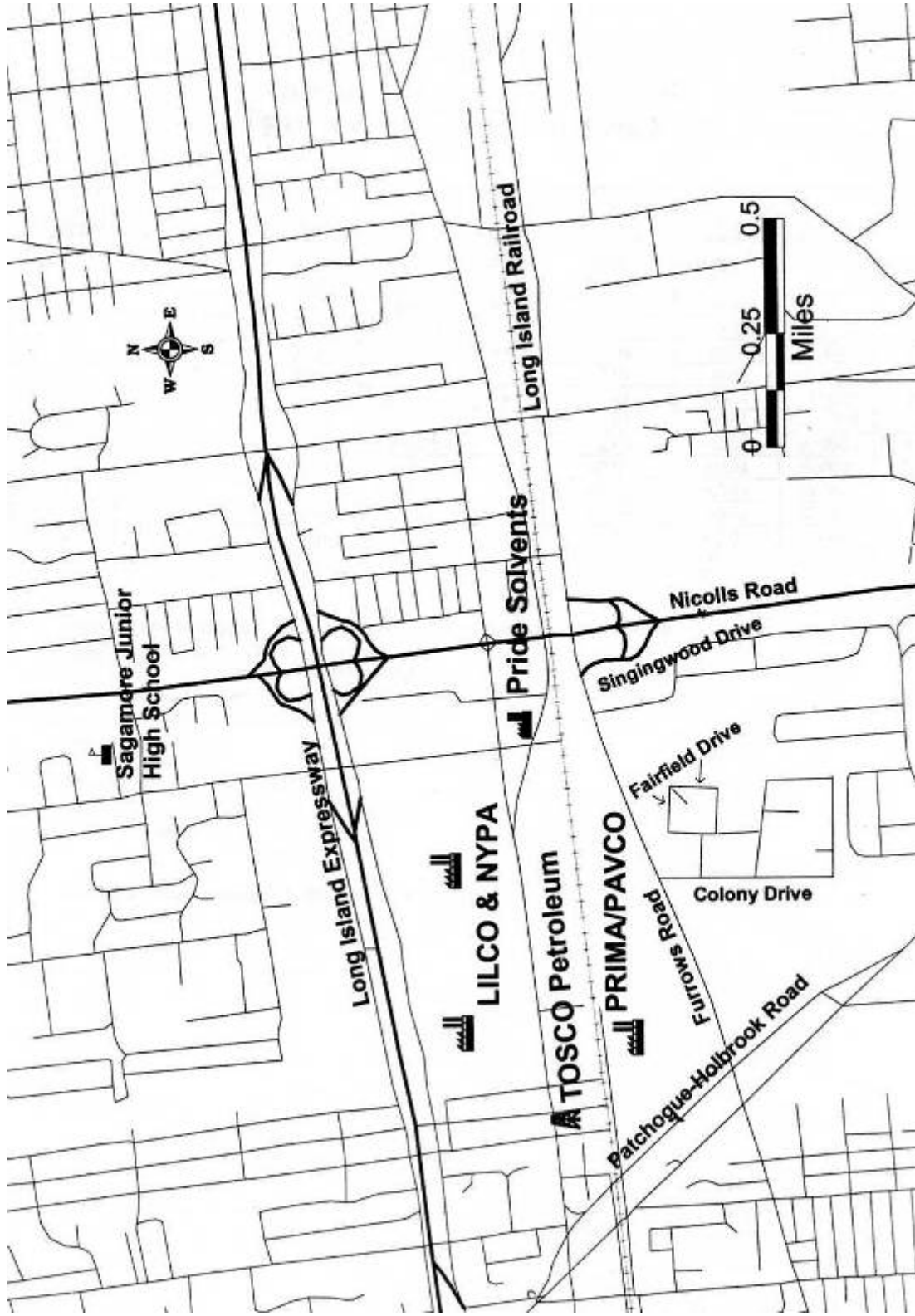
The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation, and concurs with its findings.

Team Leader, CAT, SPAB, DHAC, ATSDR

APPENDIX A

Figure

Figure 1. Study Area



APPENDIX B
Public Health Hazard Categories

INTERIM PUBLIC HEALTH HAZARD CATEGORIES

CATEGORY / DEFINITION	DATA SUFFICIENCY	CRITERIA
<p>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.</p>	<p>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</p>	<p>Evaluation of available relevant 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.</p>
<p>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 substance or conditions that could result in adverse health effects.</p>	<p>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</p>	<p>Evaluation of available relevant information* suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants (including radionuclides) 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 or safety hazards.</p>
<p>C. Indeterminate Public Health Hazard This category is used for sites in which “critical” data are <i>insufficient</i> with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.</p>	<p>This determination represents a professional judgement that critical data are missing and ATSDR has judged the data are insufficient to support a decision. This does not necessarily imply all data are incomplete; but that some additional data are required to support a decision.</p>	<p>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.</p>
<p>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.</p>	<p>This determination represents a professional judgement based on critical data which ATSDR considers sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</p>	<p>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.</p>
<p>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.</p>	<p>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</p>	

*Such as environmental and demographic data; health outcome data; exposure data; community health concerns information; toxicologic, medical, and epidemiologic data; monitoring and management plans.

APPENDIX C

Summary of Response to Public Comments

SUMMARY OF RESPONSE TO PUBLIC COMMENTS

This response to public comments was prepared to answer area residents' questions on the draft Health Consultation: Results of Air Exposure Investigation Prima Asphalt Concrete Inc. (PAVCO). The public was invited to comment on the document during the public comment period which ran from August 8th, 2005 through September 5th, 2005. If you have any questions, please contact the New York State Department of Health (NYS DOH) at the toll-free number 1-800-458-1158 extension 27850.

Comment #1: Why was continuous hourly monitoring not used?

Response #1: Continuous Air Monitoring (CAM) instrumentation was utilized for some chemicals, such as respirable particulate matter (PM_{2.5}). This apparatus was already in place at a Suffolk County Department of Health Services (SCDHS) Air Monitoring Station at the Sagamore Junior High School. This served as a control location for this study to evaluate dust and particulates in the "Colony". The particulate material data from this continuous monitoring location were compared with the 1-hour complaint initiated samples at the "Colony" and showed no difference. SCDHS was later able to purchase and install a continuous 1-hour sampling monitor for respirable particles. To date, levels of particulates measured at the two monitoring locations were less than US EPA ambient air standards.

Comment #2: A resident is concerned about exposure to airborne particles of asbestos and silica detected in the study sample results.

Response #2: Respirable crystalline silica was not detected in any of the samples collected at the Colony or background location (Sagamore Jr. High School). Although one sample at the Colony and two samples at the Sagamore Jr. High School (background) did measure asbestos fibers, the concentrations were low and below the Federal clearance standards used for abatement projects used at schools. As demonstrated by the background measurements, asbestos is present from both natural and man-made (e.g., insulation, shingles, vehicle brake linings) sources.

Comment #3: A resident requested continued monitoring until all the granite is removed from the site.

Response #3: The pile of aggregate has been steadily used for operations at Prima Asphalt. In response to complaints from residents and local agencies, Prima agreed to reduce the height of the pile of material. Although the material is still present on the Prima site, wind transport is reduced. However, continuous and odor incident monitoring has continued at the Colony and at the background location to provide additional data for both the Prima Asphalt Concrete Inc. Health Consultation as well as the Holtsville, Farmingville, Holbrook and Lake Ronkonkoma Communities Air Health Consultation. Based on data collected for both air monitoring investigations and the limitations of such studies it is unlikely that continued monitoring of this kind would be useful.

Comment #4: A resident has made repeated complaints since 2003 of “creosote” type odors that are reportedly coming from the asphalt plant.

Response #4: The Health Consultation for Prima Asphalt Concrete summarized data for particulates, respirable crystalline silica, total dust and asbestos following complaints made from July 2000 to November 2000. These samples were to evaluate whether the pile of aggregate at Prima would become airborne and if the levels of these analytes could pose a health risk, but not to evaluate odor complaints. However, the one-hour odor incident data were also being collected for the Holtsville, Farmingville, Holbrook and Lake Ronkonkoma Communities which encompasses the study area for Prima Asphalt and the “Colony” and data from 1997 to 2002 were evaluated. During the study period, odor complaints were received throughout the year, not only in summer. Neither NYS DEC or Suffolk County report any other odor complaints from this particular area. Because large and small industries and transportation factors can intermittently affect local air quality, the specific source(s) of such odors is difficult to determine exactly. However, there will be ongoing attention by state and local government agencies to make sure facilities within their jurisdiction are taking the required measures to control and reduce their emissions.