

**North Pole Refinery
Technical Project Team (TPT) Meeting
April 15, 2010
University of Alaska, Fairbanks**

Draft Summary Comments

TPT Members in attendance

Ann Farris	Alaska Department of Environmental Conservation (DEC) Project Manager
Bill Butler	City of North Pole- Director of City Services
Mark Gregory	Flint Hills Project Manager (To be replaced by Marc Coggeshall)
Cindy Christian	DEC Drinking Water Compliance Program Manager
Lee Johnson	DEC Drinking Water Program, Environmental Engineer
Elizabeth Page	Reiss Remediation
Dr. Lori Verbrugge	Alaska Department of Health and Social Services (DHSS) - Toxicologist
JoAnn Grady	OASIS-Grady and Associates-Team Facilitator

Support Personnel in attendance

Steve Bainbridge	DEC Contaminated Sites Program, Manager
Stephanie Buss	E & E - Toxicologist
Dr. Mike Carakostas	Tox Strategies DVM, PhD. (Via telecon for tox discussion only)
Marc Coggeshall	Flint Hills (Via telecon)
Pat Conlon	Environmental Standards, Inc. (Via telecon for tox discussion only)
Jim Durant	U.S. Agency for Toxic Substances and Disease Registry (ATSDR) (Via telecon for tox discussions only)
Marti Early	DEC Contaminated Sites Program, Community Involvement Specialist
Denise Elston	DEC Contaminated Sites Program, Environmental Program Specialist
Dr. David Gaylor	Technical advisor to Tox Strategies
JoAnn Grady	Grady and Associates-Team Facilitator
Nim Ha	H&SS Health Educator (Via telecon)
Dr. Laurie Haws	Tox Strategies (Via telecon for tox discussion)
Audra Henry	ATSDR (Via telecon for tox discussion)
Michelle Kane	State of Alaska, AG's Office (Via telecon-introduction only)
Richard Kauffman	ATSDR (Via telecon for tox discussion only)
Lisa Minnear	OASIS Environmental
Mr. Podpeskar	Bloomberg & Podpeskar (Via telecon-introduction only)
Joe Sarcone	ATSDR (Via telecon for tox discussion only)
Max Schwenne	OASIS Environmental
Andrew Tachovsky	Tox Strategies (Via telecon for tox discussion only)
Dr. Chad Thompson	Tox Strategies toxicologist (Via telecon for tox discussion only)
Rock Vitalie	Environmental Standards, Inc. (Via telecon for tox discussion only)
L. Weaver	Arcadis (Via telecon for tox discussion)

Welcome

The first meeting of the North Pole Refinery technical project team (TPT) began with a greeting by Steve Bainbridge the ADEC- Director of Contaminated Sites Program. Mr. Bainbridge began his welcome with a brief explanation of the overarching goal of the contaminated sites program: to protect human health and the environment. He stated he was pleased to see the TPT formed and the collaborative effort towards the remediation of the sulfolane releases undertaken within

the State's regulatory framework. He stated the State was committed to providing the resources necessary to assure a thorough and comprehensive oversight of the remediation work, and thanked the TPT members for their commitment towards the remediation effort.

Introductions

TPT facilitator JoAnn Grady welcomed the team and asked members to introduce themselves, give a brief description of their professional background, roles on the team, and expectations for the project. Ms. Grady mentioned that the biographies of the state experts on the team would be posted on the new DEC web page.

Overview of the Agenda

Ms. Grady reviewed the agenda for the meeting and the team's guidelines for discussion. She stated that additional support personnel would later join the toxicology discussions via telecon. Team members briefly introduced the background and affiliation of the other members who were expected to join by teleconference. Ms. Grady reminded the team that the objectives of the day's meeting were to:

- Discuss and develop the process by which technical information will be gathered, reviewed and evaluated by members of the team.
- Create TPT sub-groups and develop process objectives.
- Develop sub-group schedules to report findings back to the TPT for review.

DEC Regulatory Process

Ann Farris, DEC Project Manager, presented an overview on the DEC's regulatory process for contaminated sites. Her Power Point presentation is posted on DEC's site summary web page on the North Pole Refinery for quick reference and future use by the TPT.

Site Characterization

Elizabeth Page of Reiss Remediation led the team in the review and discussion of the Draft Site Characterization Work Plan. She presented the objectives of the plan, the work to date towards meeting the objectives, and the schedule of future steps planned. Ms. Page answered questions from the TPT regarding existing data, sampling methodology, and the roles of subcontractors performing the well tests.

Ms. Farris stated that while the emergency response from Flint Hills to the sulfolane spill has been commendable, the project was now moving into the longer term remediation effort. She reiterated the State's procedures and guidance for developing a site characterization plan, and stated the State will require a more detailed description, in writing, of the work to be performed. She acknowledged receipt of two interim reports from Flint Hills on the work to date, and said the information contained within those reports should be folded into the Work Plan. Ms. Farris said DEC would respond to the plan with formal comments. The team agreed to a comment resolution meeting on the draft Site Characterization Work Plan on May 5th.

The TPT Toxicology Sub-Group

Several toxicologists joined the meeting via teleconference to join the discussions of the development of objectives and process by which the Toxicology subgroup of the TPT would conduct their work.

Review of the plant study design draft objectives and scope

Stephanie Buss, of E & E, led the discussion on developing objectives for the plant study. She stated that discussions prior to the development of the TPT took place among a working group that will continue as the toxicology subgroup of the TPT. She stated that in a recent meeting of the group, general objectives to conduct two studies had been established:

- a short term study to test sulfolane concentrations in crops grown in local gardens, and
- a longer-term greenhouse study to quantify plant uptake of sulfolane.

Ms. Buss suggested that objectives of the toxicology subgroup may change as the team transitions through different aspects of the project and new pathways must be considered.

Mr. Coggeshall said that Flint Hills would provide a detailed document with the objectives and outline of the study design for the plant uptake study to the tox-subgroup prior to their April 23rd meeting. Ms. Buss said that the tox subgroup would develop target concentrations for the plant uptake study and ensure that they establish a measurable analytical detection limit that addresses the human health concern.

Inclusion of a Conceptual Site Model

Mr. Coggeshall, of Flint Hills Resources, asked how the conceptual site model (which describes all the various ways in which people, animals and plants would be exposed) would be developed in a regulatory document. Ann Farris stated that the conceptual site model should be part of the Site Characterization Work Plan that was submitted by Flint Hills to DEC. Mr. Coggeshall said that during the comment resolution period, Flint Hills and DEC should resolve the inclusion of that document in the work plan.

Health Consultations and Health Guideline Processes

Dr. Lori Verbrugge, of the Alaska Department of Health and Social Services (DHSS), led the team through a description of the H&SS Health Advisory Procedures and the federal Agency for Toxic Substances and Disease Registry (ATSDR) Health Consultation process. Dr. Verbrugge outlined the differences between the roles of the DEC and DHSS with regard to their involvement in the project. She said that DHSS works in collaboration with ATSDR to advise the public on health concerns from contamination and contaminated sites. DEC is the regulatory agency controlling the cleanup of contaminated sites. DHSS is not a regulatory agency and has no authority for regulatory oversight. They do, however, issue Health Consultations to communities impacted by contamination.

Dr. Verbrugge continued, stating that in response to a request from ADEC based on detections of sulfolane in the City's raw water and private wells, DHSS and ATSDR worked together to develop advisory values for sulfolane in drinking water protective of human health. They presented those results in an ATSDR Health Consultation naming that value at 25 parts per

billion (protective of infants). Since the document was highly technical, they produced a summary of the document which was written for the layperson to understand, and coupled that with a Frequently Asked Questions (FAQ) Factsheet to address the concerns of the community.

Dr. Verbrugge stated that a second Factsheet was presently being created for distribution to community members within two weeks. She said that DHSS and ATSDR would provide additional Health Consultations or Factsheets when additional health issues arose and indicated a Health Consultation or a Factsheet will be issued once the results of the plant study have been evaluated to provide more information to the community regarding the ingestion of a summer garden harvest. She noted that Health Consultations usually take longer to produce than Factsheets, as they are usually a product of lengthy research. The Factsheets are documents that are produced more quickly to provide interim information to community members.

Dr. Verbrugge emphasized that, at present, it was difficult to answer in-depth questions about sulfolane, since it is not a well studied contaminant. However, there are conclusions about its safety that she feels comfortable stating: one such conclusion, which will be reported in the next Factsheet, is that using the water for bathing poses no risk. Several members of the team felt that this information was not clear to the public. The understanding by community members regarding the different levels and aspects of the risk associated with sulfolane varies.

In order try to address these concerns about the community, Ann Farris suggested it may be worthwhile to create a Risk Communication subgroup of the TPT involving the many state, federal and private entities involved in this project and; the benefit being all entities could be informed of the each other's Communications regarding sulfolane. She stated that there had been a great effort in FH's emergency response with regard to communicating and not alarming the community about the release, but a more collaborative effort would be beneficial

The TPT agreed to form a Risk Communication subgroup, comprised of members from DEC, DHSS, and Flint Hills. The group will coordinate and share resources to provide coordinated communications to the public. Marty Early and Nim Ha agreed to convene a meeting of the subgroup and establish the objectives and procedures according to which communication can be conveyed to the community of North Pole. Marty Early stated that this should not be understood to be the State asking for permissions to relay information to the Community. The State is independent in their responsibility to convey information to the public. This subgroup would simply serve to review information being released regarding the remediation so as coordinate and not contradict efforts.

ATSDR Health Guidance Evaluation on Sulfolane Levels in Drinking Water

Dr. Verbrugge introduced Jim Durant, an ATSDR toxicologist, and asked that he describe the methods his agency used to establish the benchmark dose for sulfolane in drinking water. Mr. Durant explained how ATSDR reached their conclusions based on data from all available research on sulfolane toxicity to establish what levels in drinking water they feel are protective of human health.

He stated ATSDR was satisfied with their conclusions and issued the result in their Health Guidance Evaluation, stating the 25 parts per billion level of sulfolane in the water to be protective of infants.

Ann Farris said the State agreed with ATSDR, and is using their advisory levels as interim cleanup levels until more data on sulfolane is available or a comprehensive, robust site-specific risk assessment is completed. She stated that the question now is not how the ATSDR reference dose and resulting advisory levels were calculated, but how FHR might request an alternative groundwater cleanup level based on their evaluation of exposure at the site . She stated that within the regulatory framework for contaminated sites, a “Method 4” Risk Assessment could be conducted per the State regulations and guidelines, to propose an alternative cleanup level for the groundwater

Mr. Durant added that while he did not feel that ATSDR would change the conclusion or the decisions issued by ATSDR, he felt that with further discussion, the scientists gathered could come to an understanding of how they reached their conclusions. Ms. Grady suggested that during the lunch hour, the toxicologists continue to achieve the sought understanding regarding ATSDR’s conclusions. The subgroup agreed and continued their discussions during the noon hour. The results of this discussion were presented to the whole team after lunch. An understanding was reached among the toxicologists, although they still disagreed on the appropriate method to calculate an advisory level. ATSDR stated they were taking the most conservative approach, even if there were other methods that could be considered equally scientifically valid. Based on the discussion, Ann Farris stated DEC did not see any reason, without more research on the toxicity of sulfolane, that the State should alter the reference dose determined by ATSDR. Cumulative risk and the evaluation of other pathways through the risk assessment process may result in a different recommended cleanup level, but the reference dose should not change.

Plant Study Specifics

The TPT as a whole re-convened after lunch to discuss specifics of the aforementioned approach to the plant study. The group agreed that the short term study would be used to provide information urgently requested by the community regarding the safety of this year’s harvest. The short term study would be concerned with correct sampling of the plants. The long term study would be an effort to understand sulfolane uptake into plants in an effort to understand the risk from eating crops beyond just this year.

The tox subgroup will meet on April 23rd and will develop more concrete objectives for the plant uptake study sampling and analysis plan.

Bill Butler expressed concern about the appearance of bias if the plant study is directly conducted by Flint Hills and stated he would like the study to be conducted independently with the State taking the lead on data collection. Ann Farris stated that could be a possibility, and there may be a vehicle to alleviate the perception of bias. She told Flint Hills that she would need very clear objectives and scope for the study before the methods for implementation could be determined. Mr. Coggeshall said he would provide the requested objectives and they would further discuss the possibility of working together to undertake the study with clear State Regulatory oversight of the work.

TPT Drinking Water Subgroup Process and Objectives

Ms. Page began the discussion of the status on the proposed new drinking water well at NP. She began with a review of the models used by Flint Hills to investigate characteristics of the plume to determine sampling and well placement locations. She reviewed data from the well evaluations presented in the draft Site Characterization Work Plan, currently under DEC review.

Mr. Coggeshall discussed the specifics of construction plans for proposed new drinking water wells for North Pole. He stated two wells are being planned for redundancy purposes. He related basic operational and permitting requirements as well as dimensions of the proposed well. He briefly described efforts to expand the water distribution system to connect additional residents within the city as well as the ongoing efforts to monitor North Pole drinking water supply wells.

Lee Johnson, DEC, Drinking Water Engineer, stated the DEC hoped Flint Hills would submit incremental design information so that when they were ready to construct the new well the construction would proceed without setbacks due to regulatory review or concerns. Mr. Coggeshall replied that Flint Hills intended to do so. He said that Flint Hills had not determined the optimum site for the new wells, but were close to making the final decision. Mr. Johnson suggested that Flint Hills coordinate with the municipality of North Pole to discern any long term plans for building and ensure that well construction did not interfere with any proposed development and/or expansion of the City.

Update on the Expansion of the Distribution System to Connect Residents within the City

Mr. Coggeshall discussed the options for expansion of the water distribution within the City of North Pole. He stated Flint Hills is discussing options for people with wells within the City limit: the option of bulk water or a connection to City water. He said that the most likely choice would be connection to City water by extending City water mains. He said that it was also possible to dig deeper wells for these residents but that did not appear to be a good option. He reiterated that the final decision regarding water distribution to residents within the city limits would be communicated to the affected well owners in late May.

Mr. Coggeshall stated that the same options would be evaluated for residents living outside the City limits but would be more complicated due to the distances involved and complexities arising from municipal boundaries. He said that Flint Hills had not decided yet on which options would or could be pursued, but that they are continuing to work with the city of North Pole and other stakeholders to resolve the many issues associated with extending the City service.

Ongoing Sampling on North Pole Drinking Wells

Cindy Christian, DEC, Drinking Water Compliance Program Manager, discussed the ongoing sampling of the City drinking wells and reviewed data collected to date at the two wells, # 1 and # 2. She concluded there is a moderating trend in the concentration in both wells based on the limited amount of data currently available to DEC. She stated the DEC is recommending continued weekly sampling of the wells, at least through the breakup season, to continue to collect the needed data. Once DEC receives a full data set for both wells, they will revisit the sampling frequency.

The TPT established a drinking water subgroup which will continue to meet and coordinate drinking water well issues. They will discuss the process and objectives for review of their work and will report to the TPT at the next meeting.

Review of the Source Remediation, Interim Removal Action Work Plan, Summer Plans

Ms. Page began the discussion with an overview of the current remediation recovery system. It consists of 4 operational groundwater recovery wells connected to an air stripper and a coalescer. She stated that the wells have been there and operating for quite some time and were initially put in place as a temporary system. As a result, Flint Hills has plans this summer to upgrade lines and make sure they are up to current refinery standards.

She stated they currently have a NPDES permit from the U.S. Environmental Protection Agency to discharge from their holding ponds. Dr. Verbrugge asked if they were sampling for sulfolane from their ponds. Ms. Page said they are currently developing plans to sample. She said they have wells down gradient that do not have any sulfolane. They are dedicated to continuing to investigate and characterize where and how the sulfolane is traveling and are dedicated to building a treatment system that can be relied upon for the long term.

Mark Gregory explained that the goal of the recovery well system is to extract hydrocarbons, and the hydrocarbon contains the sulfolane. The sulfolane leaches out of the hydrocarbons and dissolves into the water. He said the more contaminated hydrocarbons you can remove from the recovery wells, the more of the sulfolane you keep from escaping into the groundwater.

Ms. Page acknowledged it is a complicated source to remediate, but they are committed and will continue to actively remediate it on a number of levels and on a number of fronts. They continue to evaluate many options and investigate the best long term solutions. They are being aggressive to ensure they have complete capture of the source area under the refinery, so that no sulfolane will go off the refinery's property.

She continued with a review of their plans for the summer, which include the review of all of the specific details of the recovery system in place to make sure that the source is being actively remediated. New wells will be put in place and more sampling conducted if their research shows the capture zone is not complete. Ms. Page went on to explain and review the plans for drilling wells into the permafrost that exists in the area of the plume.

Ms. Farris stated that while the general direction of the Interim Action Plan looked good, she would need to see more details of the work being planned per the regulatory framework and guidelines. Additionally she stated the work plans for the vertical delineation and subpermafrost well installation will have to be folded into the Draft Site Characterization Plan, even though they have been submitted to the DEC as separate documents. She again stated that in addition to merging the documents, more attention to the level of detail will need to be submitted. She stated that the DEC will give Flint Hills formal comments, and the team agreed to meet on May 5th for a comment resolution on the document.

Future TPT Meeting Dates

The TPT agreed to meet May 5th for comment resolution on the draft Site Characterization Work Plan, and on May 6th for a meeting of the TPT as a whole. The meeting will be held at the DEC offices in Fairbanks. A draft agenda will be sent to participants no later than April 28th.

Subsequent TPT meeting dates have also been set for June 18th and July 14th, both meetings to be held in Fairbanks.

The meeting adjourned at 5:00PM.