Conversation Record

Date:	April 29, 2010	**Time:**	11:30 AM – 12:30 PM
Location:	Remmy Thomas Moose and Manley, 455 Capitol Mall, Suite 210, Sacramento, CA (Dr. Borak attended by phone)		
Subject:	**Methodology for assessing cancer risk associated with leached concentrations of MTBE from PEX piping and the 1990 study by Robinson et al.**		

Type:

___	Incoming	___	Telephone	___	Visit
___	Outgoing	X	Conference Call	___	Other: ___

Name of Person:	Jonathan Borak, MD, DABT, Clinical Professor of Epidemiology & Public Health and Associate Clinical Professor of Medicine at Yale University, New Haven, CT		
Organization:	Jonathan Borak & Company, Inc.	**Contact Number:**	203-777-6611

SUMMARY OF CONVERSATION

Dr. Borak provided the following information and guidance about how to estimate the level of cancer risk associated with exposure to MTBE that leaches from PEX products:

- The concentration-based standards for MTBE in drinking water developed by NSF and OEHHA are not to be treated as "ceilings."
- The assessment of cancer risk should be based on a 70-year "lifetime" period of exposure instead of only the period during which a concentration-based standard might be exceeded. In other words, an assessment of cancer risk should identify the total exposure that would occur over the lifetime of an exposed individual. Exposure at less than the minimum levels (i.e., less than 70 years or less than 3L a day, or to water containing constituents at less than the standard concentration) is insufficient to create a significant risk to public health
- The maximum total exposure of MTBE leached from PEX piping should be compared to the total allowable lifetime dose. The total allowable lifetime dose is the product of the lifetime average daily dose (LAAD) and the number of days in a lifetime (70 years x 365 days/year). Based on OEHHA's concentration-based standard of 13 µg/L and a drinking water rate of 3 liters per day (L/day), over 70 years (365 days/year) the total allowable lifetime exposure would be 996,450 µg.
- Dr. Borak then recommended that the total lifetime dose of MTBE from PEX be estimated and compared to the total allowable lifetime exposure value of 996,450 µg. Dr. Borak was certain

that the maximum total exposure of MTBE would be considerably smaller than the total allowable lifetime exposure value of 996,450 µg, which means that the level of increased cancer risk from PEX would be less than one in one million. Dr. Borak explained that a level of risk less than one in one million is not considered to be a substantial level of cancer risk by regulatory agencies.

Dr. Borak also helped the group better understand the results of the 1990 study by Robinson et al. that is used by both NSF and OEHHA in their respective oral risk assessments of MTBE. In particular, subsequent studies have demonstrated that any adverse kidney effects indicated by the Robinson study were due to a gender- and species-specific effect that is unique to male rats and thus there is no support for a finding that MTBE is likely to result in adverse effects to kidneys in humans.