

June 27, 2013

[REDACTED]  
[REDACTED]  
[REDACTED]

Dear Mr. and Mrs. [REDACTED],

This letter summarizes the results of an investigation by the Kansas Department of Health and Environment (KDHE) in response to your concerns regarding high voltage power lines and the number of persons associated with Axtell who have developed cancers.

#### *Background and Initial Assessment*

You contacted the KDHE Office of the Secretary via a letter dated April 11, 2013 and on April 19, 2013 you spoke with KDHE staff regarding your concerns about high voltage power lines and cancer in Axtell. During the conversation with Mr. [REDACTED], KDHE staff explained that scientific evidence points to the possibility of an association between high voltage power lines and childhood leukemia; however the weight of the evidence fails to show that the association is definite. The evidence for associations with adult cancers is even weaker and inconsistent. In your letter to the Office of the Secretary, you included the names and geographical locations for two non-cancer related deaths and a number of cancer cases among Axtell residents.

In response to these concerns, KDHE developed an investigation design that entailed: 1) verification of the two non-cancer related deaths with death certificates, 2) assessing the number of stillbirths and birth defects among Axtell residents, and 3) analysis of pertinent cancer incidence rates in Axtell.

#### *Verification of Non-Cancer Related Deaths*

The KDHE Office of Vital Statistics (KDHE OVS) maintains death certificates for all deaths within Kansas. KDHE staff searched records for all counties in Kansas and was unable to find a death certificate for the adult death you mentioned in your letter; therefore, KDHE is unable to confirm the assertion that the underlying cause of death was from a birth defect. KDHE staff was also unable to locate a birth certificate or death certificate for a baby with the same last name and with the adult listed as the mother. Again, the KDHE OVS records search focused on deaths within Kansas so if the deaths occurred in other states, there may be a delay in KDHE receiving a copy of the death certificate from the other states.

#### *Number of Stillbirths and Birth Defects*

Although KDHE staff was unable to confirm the underlying cause of death for the two deaths you mentioned specifically, staff examined the number of stillbirths and birth defects among Axtell residents in general. The KDHE Bureau of Family Health maintains a statewide Birth Defects Information System. Data on stillbirths and birth defects identified at birth are pulled from birth certificates and are entered into the system. Additional data on birth defects identified later in life are submitted by physicians throughout the state and are also added into the system. KDHE staff identified 5 stillbirths

and birth defects among Axtell residents starting in 1989. This number of stillbirths and birth defects in the last 24 years is not unusual.

### *Cancer Incidence Analysis*

Data on all cancer cases diagnosed among Axtell residents between 1999 and 2009 were examined for increases in specific types of cancer. There were no cases of childhood leukemia or any other type of cancer among children. There were a number of female breast cancer and prostate cancer cases and these cases were examined further.

Age-adjusted cancer incidence rates were calculated for female breast cancer and prostate cancer among Axtell residents. An incidence rate is the rate of occurrence of new cases diagnosed within a specific time period. Age adjustment is a statistical process applied to rates of disease, death, injuries or other health outcomes that allows communities with different age structures to be compared. After performing the calculation, a statistically stable rate for female breast cancer and for prostate cancer could not be obtained due to the small number of cases among Axtell residents over the last 10 years.

An additional analysis of the female breast cancer and prostate cancer cases in Axtell and Marshall County was conducted. A Standardized Incidence Ratio (SIR) was used to determine if the observed number of female breast cancer cases and the observed number of prostate cancer cases in Axtell and in Marshall County between 2000 and 2009 were higher or lower than expected, given the population and age distribution of the communities. This additional analysis also showed the expected number of cases by specific age groups, which is important for assessing whether there was an excess of cancer in younger residents as many types of cancer, including female breast cancer and prostate cancer, are common in older age groups. A 95% confidence interval was calculated around the ratios to determine how likely it is that the number of observed cases is high or low by chance. If the confidence interval includes 1.0, then the difference between the observed and expected number of cases is likely to have occurred by chance. For this analysis, the most recent incidence rates from the Iowa Surveillance, Epidemiology and End Results (SEER) Program were used to determine the expected number of cases by age group. Iowa data is used to calculate the expected number of cases because of its demographic and geographic similarity to Kansas.

The observed number of female breast cancer cases in Axtell was more than two times greater than the expected number of cases (SIR: 2.37, 95% CI: 1.08-4.50; 9 observed cases versus 3.8 expected cases). The observed number of cases did not significantly differ from the expected number in the younger age groups. The observed number of cases in Marshall County was less than the expected number of cases (SIR: 0.94, 95% CI: 0.76-1.15; 93 observed cases versus 99.2 expected cases).

The observed number of prostate cancer cases in Axtell was more than two times greater than the expected number of cases (SIR: 2.37, 95% CI: 1.14-4.36; 10 observed cases versus 4.2 expected cases). The observed number of cases did not significantly differ from the expected number of cases in the younger age groups. The observed number of cases in Marshall County was 30% greater than the expected number of cases (SIR: 1.30, 95% CI: 1.09-1.53; 137 observed cases versus 105.5 expected cases).

### *Impressions*

The observed number of female breast cancer cases and prostate cancer cases in Axtell was more than two times greater than the expected number of cases. However, the observed number of cases did not significantly differ from the expected number in the younger age groups. In fact, all cases of female breast cancer and prostate cancer occurred in residents ages 50 and older, as expected.

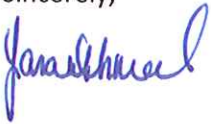
Thus far, the investigation has used data available through the Kansas Cancer Registry. Although the registry data is a very reliable source for capturing cancer cases throughout the state, the data available on cancer risk factors is sparse. Known risk factors for breast cancer include family history, late age at menopause, hormone replacement therapy, early

age at menarche, age at first childbirth, alcohol consumption, and obesity. Known risk factors for prostate cancer include family history, smoking history, diet and obesity.

Although there are examples of scientifically documented links between chemical exposure and cancer in humans, most of these have been from high-level industrial exposures. Cases where the occurrence of cancer has been linked to environmental contaminants in a community setting have only rarely been validated by scientific investigation. On average, approximately one out of every eight American women develops breast cancer at some point in life and breast cancer is the second leading cause of cancer death among women. Although most women have some risk factors for breast cancer, most women do not develop breast cancer. Approximately one out of every six American men will develop prostate cancer at some point in life.

We share your concern for the health of the Axtell community. We recognize that every case of cancer is significant for the person affected and his or her family. Within the limits of available resources, KDHE is extensively involved in efforts to reduce the occurrence of cancer in Kansas and improve the care for those in whom it does occur. Staff from our Bureau of Health Promotion can provide resources for members in your community who want information on how they can reduce the risk of cancer. We at KDHE are committed to monitoring, and helping improve, the health of our communities. If you have any questions about this report, please contact the Bureau of Epidemiology and Public Health Informatics at 785-296-1415. For more information about cancer prevention, please contact the Bureau of Health Promotion at 785-296-1207.

Sincerely,



Farah S. Ahmed, MPH, PhD  
Environmental Health Officer  
Bureau of Epidemiology and Public Health Informatics



D. Charles Hunt, MPH  
State Epidemiologist and Director  
Bureau of Epidemiology and Public Health Informatics

PC: Sue Rhodes, Administrator, Marshall County Health Department  
Robert Moser, Secretary and State Health Officer, KDHE  
Paula Clayton, Director, Bureau of Health Promotion, KDHE  
Tom Langer, Director, Bureau of Environmental Health, KDHE  
John Mitchell, Director, Division of Environment, KDHE  
Mike Tate, Director, Bureau of Water, KDHE  
Rick Brunetti, Director, Bureau of Air, KDHE  
Leo Henning, Director, Bureau of Environmental Field Services, KDHE  
Gary Blackburn, Director, Bureau of Environmental Remediation, KDHE  
Bill Bider, Director, Bureau of Waste Management, KDHE  
Miranda Steele, Director, Office of Communications, KDHE