

Web-Based Community Planning Tool for Local Public Health

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The Lincoln-Lancaster County Health Department (LLCHD) is a very active participant in the land-use review process. The land-use review process is the mechanism through which governmental agencies have the opportunity to review and provide written comments relative to various land-use applications such as proposed residential, rural, and commercial developments (preliminary plats), special permit applications (early childhood care facilities), change of zone applications, use permits, and comprehensive plan amendments. This land-use planning process is a collaborative effort involving the Planning Department, Public Works and Utilities, Health Department, residential and commercial developers, attorneys, consultants, engineers, and the individual applicants. The LLCHD meets weekly with Planning Department and Public Works staff to discuss current land-use applications.

Each year, the LLCHD reviews over 250 various land-use planning applications. To help address the increasing workload, Chris Schroeder, MCRP, our staff lead on land-use reviews, developed a desktop land-use review tool in ESRI's Arcmap GIS software. The main objective of this project was to create a land-use review tool to allow LLCHD staff to conduct land-use reviews of various land-use applications using all available GIS data sets in a consistent and timely manner. A data dictionary was developed for all the data layers that are utilized.

The land-use review tool is essentially a template of data layers or themes that are important relative to assessing possible negative public health risks and environmental impacts. These data layers include streets, rail lines, parcel data, current zoning, aerial photos, soil types, flood plain, wellhead protection areas, well locations, childcares, schools, skilled care facilities, hospitals, chemical hazards, air pollution sources, underground pipelines, and future land-use plan.

This desktop land-use review tool was then adapted for use in ESRI's ARCIMS software which is a web-based GIS mapping software. The development of the intra-net based land-use review tool affords all LLCHD staff the opportunity to access and utilize this data rich planning tool, without significant training in GIS software.

The potential for negative public health risks or impacts from proposed land-use applications are often the result of the key planning concept of incompatible uses. Frequently this involves the classical industrial and residential conflicts or the location of susceptible populations adjacent to industrial areas. The LLCHD is very cognizant of the nexus that exists between how communities are planned and the resulting affect on public health.

Historically, the LLCHD has advocated against putting susceptible populations at risk by locating them adjacent to industrial zoning which could pose a potential threat due to the storage, handling and/or release of hazardous chemicals. In 2004, the LLCHD's

Hazardous Materials Response Team responded to approximately 130 calls relative to hazardous material spills, releases, or a potential imminent hazard risk to public health. Many of these were related to the improper handling or transportation accidents involving hazardous materials. Out of these total responses, approximately fifty percent of these calls had the potential to adversely affect public health.

In addition to examining the current zoning in, and around, the location for a specific land-use application, the LLCHD utilizes our land-use review tool to identify existing chemicals hazards. Currently, our land-use review tool incorporates Toxic Release Inventory (TRI) sites, Risk Management Program (RMP) sites under the 1990 Clean Air Act Amendments, Tier II sites which are facilities that store larger quantities of hazardous materials and are required to submit a Tier II report under the Federal Emergency Planning and Community Right to Know Act, major air pollution sources, special waste sites, and underground pipelines which carry natural gas, anhydrous ammonia, or petroleum products.

In the past, LLCHD has successfully advocated for establishing buffers between Industrial zoned property, residential populations and susceptible populations (i.e. schools, child care centers, assisted living facilities). Often, a 300 foot buffer is recommended based upon data obtained from the United States Department of Transportation Emergency Response Guidebook relative to specified evacuation distances for some of the more toxic hazardous chemicals.

Recently the LLCHD reviewed a special permit application for an early childcare facility that was proposed to be located in industrial zoning. After presenting our concerns relative to the allowed uses in the industrial zoning and the associated risks for exposure to hazardous chemicals, the applicant withdrew the special permit application. . When childcares, gymnastic schools, and other facilities with susceptible populations are proposed to be located in or near areas at risk for exposure to hazardous chemicals, the LLCHD recommends a 300 foot separation from hazardous materials and the development of emergency response/ evacuation plans, an emergency shut-off switch for the heating, ventilation, and air conditioning system (HVAC), and specific air filtration

Within the last two years, the LLCHD began to more closely scrutinize a not so obvious chemical hazard threat, underground pipelines which transport natural gas, anhydrous ammonia, and petroleum products often under high operating pressures. For years, the LLCHD has had in its possession a map depicting the approximate location of these pipelines and knew these underground interstate pipelines posed a treat to public health in the event of a catastrophic failure of the pipeline. However, it was, and still is, very difficult to assess the public health risk posed by these underground pipelines. The LLCHD proceeded to conduct research regarding high pressure underground pipelines and found that underground pipelines have ruptured in different areas of the country and the consequences to public health can be dramatic. Through this research, a paper published by C-FER Technologies for the Gas Research Institute was discovered that provided a formula to calculate a hazard or high consequence area for a natural gas pipeline related to its operating pressure and diameter. The LLCHD contacted the

companies that operate the high pressure natural gas pipelines in Lancaster County to obtain exact location data in electronic form and pipeline operating pressures and diameters. When reviewing proposed developments that are potentially impacted by a natural gas pipeline, the LLCHD utilizes this data to calculate a hazard area and recommend that occupied structures not be located within the hazard area, or, at the very least, potential lot buyers or future owners be notified regarding the pipelines presence and its associated hazard area.

In addition to examining susceptible populations' exposure to hazardous chemicals, the LLCHD reviews the various land-use applications for the suitability of specific types of wastewater treatment systems, groundwater quantity and quality, noise pollution impacts from airport expansions, proposed motorcross tracks, and development that abuts major roadways such as Interstate 80, which bisects our community.

Because many of the LLCHD's recommendations do not have the benefit of being supported by specific zoning regulations or local ordinances, the LLCHD's Board of Health has created a sub committee to examine some of these policy level public health planning issues such as hazardous materials use and zoning codes, underground pipelines and recommendations for protecting our community, and community design to promote physical activity. This Board of Health sub committee will meet with a planning commission sub committee to examine the aforementioned key public health planning issues and how they affect our communities overall health. Its is hoped that these meetings will result in a policy level discussion to provide more concrete guidance relative to our recommendations for specific land-use planning proposals.