City of Grand Island

Tuesday, May 04, 2010
Study Session

Item -1

Discussion Regarding Odor Ordinance

Staff Contact: Jeff Pederson

Council Agenda Memo

From: Jeff Pederson, City Administrator

Meeting: May 4, 2010

Subject: Discussion of Odor Ordinance

Item #'s: 1

Presenter(s): Shannon Oster, Assistant to the City Administrator

Background

The Public Works Department has been the source on odor monitoring for several years. They administer an Odor Hotline, which has existed since September of 2000. In 2006 the Nasal Ranger Field Olfactometer® was purchased for monitoring odors at the Wastewater Treatment Plant. The Nasal Ranger is a field olfactometer device which measures odor concentration or odor strength. Over the past decade more cities and states have begun using field olfactometers to quantify odor because it is more objective and the relatively low cost and portability.

Discussion

Administration will present the framework of how an odor ordinance would be shaped. This is based on researching other municipalities, studies on odor issues, and speaking with odor experts. What was found is there are few places which have an odor ordinance, because it is a subjective issue, and the difficulty measuring odor in an affordable and timely manner. Of the cities that have an odor ordinance, a complaint response system in combination with an odor investigation is common. Because the complex nature of odor and the multiple steps necessary to determine an odor is offensive, an ordinance would be a new program.

Included in the packet is a framework of an odor ordinance, an overview of the Nasal Ranger and field olfactometry, and a summary of data from Nasal Ranger samples and Odor Hotline calls.

Conclusion

This item is presented to the City Council in a Study Session to allow for any questions to be answered and to create a greater understanding of the issue at hand.

It is the intent of City Administration to bring this issue to a future council meeting.

Framework of an Odor Ordinance

An odor ordinance would likely be treated as a nuisance, so the determination that an odor is a nuisance would go through a process. The following is what the framework of an odor program would look like.

1. **Complaint System**. A complaint system is based on measuring multiple, individual public reactions to an odor that residents believe is unacceptable. Using complaints to initiate the odor process is important to the determination that an odor is offensive versus tolerable. The City would set a complaint criterion that would need to be reached in order for it to be considered an odor episode.

   Complaint criteria: receiving 8 official odor complaints in 12 hour period through an Odor Hotline. Calls must be similar in nature. An *Official Complaint* includes: one complaint per household; provide the necessary information to hotline responder; and must call at the time of the odor.

   Multiple Episodes of Odor: requiring two odor episodes reaching the complaint criteria in 30 days to trigger a response (e.g. 8 complaints in two separate 12 hour periods). This demonstrates that the odor is a recurring problem for the community. Once that happens an odor investigation follows.

2. **Investigation of Odor**. This will verify the odor is offensive by investigating through the use of a Nasal Ranger (or equivalent field olfactometer), or an odor inspector to confirm an odor is present. The investigation of odor would immediately follow the second odor episode.

   Using the Nasal Ranger to investigate the odor would set a D/T considered offensive as well as setting other measurement requirements. A 7 and greater D/T or greater than 7 D/T would be appropriate levels to consider a nuisance. D/T ratios are at 2, 4, 7, 15, 30, and 60. There should be at least two readings no less than fifteen minutes apart in a one hour period. The location of readings is taken at the odor source's property line or nearest location of human habitation. The person inspecting the odor using the Nasal Ranger needs to be properly trained to take readings and tested for reasonable odor sensitivity (using a nasal chemosensory test).

   The other method to investigating odor complaints is having an odor inspector that simply verifies there is an odor present without quantifying the odor on the Nasal Ranger. This odor inspector should also be tested for reasonable odor sensitivity.

   Either of the two investigation methods will confirm the odor is a violation and the odor source is notified there is a violation.

3. **Odor Violation: Remedial Plan, Review, and Implementation Process.** An important part to the odor violation is improving the source of odor. Fines would be less important than compliance in an effort to eliminate odors that exceed the standard specified in the ordinance.

   First, the odor source in violation would develop an action plan to resolve the odor issue in a set number of days from violation (30 days). The plan must be submitted to a panel or

community Odor Board for review and approval. The Odor Board will work with the odor source to make sure the plans are adequate and implemented. If consulting work is necessary for developing plans or reviewing plans, then the odor source will pay for those costs. If the plan is not implemented or the odor source fails to submit a plan then it would go to court.

Fiscal Note

Nasal Ranger: +$1,500
$150 Nose Piece per user one time purchase
Maintenance of Nasal Ranger: $160 recalibrating biannually
Training/Odor School: $375/person plus travel
Odor Sensitivity Test: varies
Administrative Costs: The most substantial cost to an odor ordinance is the staff time necessary for a new program. There would be a significant increase in the time spent monitoring an Odor Hotline and maintaining a log of the information. The Hotline would need to be monitored seven days a week and possibly 24 hours a day. Having staff work as Odor Inspectors would require time for training, as well as be available seven days a week for an investigation. Staff time managing and working with the Odor Board is the last substantial cost worth noting.

An initial discussion has been held between the City and the Central District Health Department, including the role that the CDHD might play in administration of an odor ordinance. Should an Odor Board be established, representation from CDHD would be essential. Determination of any role that CDHD would play in administration of the complaint response process would be determined through further discussions with CDHD.

Overview of the Nasal Ranger Field Olfactometer®

The field olfactometer was developed in 1958, by the US Public Health Service. This is more commonly called a "scentometer" or box scentometer. A field olfactometer quantifies odor concentration based on the dilution to threshold (D/T) and measures by dynamic dilution of odor. This takes the ambient air and mixes it with filtered air, and then sniffed out. Dilution to threshold is read at ratios of 2, 7, 15, 31, 170, and 350. For example, at D/T 2 is two parts odor free air with one part ambient odorous air.

Field olfactometers are one of the only quantifiable odor measurement tools. Other methods to measure odor exist, including the n-butanol scale (i.e. odor intensity referencing scale) and laboratory dynamic, triangular force choice olfactometry; however, field olfactometers have been more frequently used because their relatively low cost and portability.

St. Croix Sensory developed the Nasal Ranger Field Olfactometer in 2002. The Nasal Ranger is a type of field olfactometer, but more advanced than the traditional scentometer because of the calibrated inhalation rate, orifice dial, and nasal mask. It has D/Ts of 2, 4, 7, 15, 30, and 60. A D/T of 2 is considered "just noticeable" and a 4 D/T is common in a city according to odor experts at St. Croix Sensory (2006, McGinley & McGinley).

Field olfactometers are relatively simple to administer but there are human factors involved. For example, people who are desensitized to a certain smell or seasonal congestion can impact a D/T reading. To improve the credibility of the readings there is training available to become a "certified odor inspector" and sensitivity testing. Sensitivity testing is a nasal chemosensory testing method used by ear, nose and throat clinics.

The City purchased a Nasal Ranger in 2006, and began taking samples through the Public Works Department. Operators at Wastewater Treatment Plant have used the Nasal Ranger in twelve locations in the WWTP and JBS vicinity. Those locations were selected by CH2M Hill as a part of an odor study and chosen for modeling, not an ordinance. A summary sheet with the reading's data is included.

St. Croix Sensory, 2006

Overview of Nasal Ranger Readings and Odor Hotline Complaints

Odor Hotline: Information available since 2006.
Nasal Ranger: WWTP Operators have taken readings since 2007. Typically these are recorded as the number of instances greater than 7 D/T by the odor descriptor/odor source.

Based on the information below the Hotline calls and amount of readings over 7 D/T has declined each year. Rendering has always been the most frequent odor source. Although the information is interesting, the report below is not a reliable resource to track odors or shape an odor ordinance due to inconsistent sampling, user variability, and lack of detailed data. The readings are more useful to self-monitoring at the WWTP and tracking odor sources.

	2007				2008				2009				2010
Odor Type/Odor Source	1st Quarter (Jan-Mar)	2nd Quarter (Apr-June)	3rd Quarter (Jul-Sep)	4th Quarter (Oct-Dec)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter
Total Readings	1,194	1,186	1,195	1,030	1,193	1,037	1,095	771	797	656	488	524	177
Number of Readings = to 7 D/T	1,162	1,113	1,078	940	1,163	984	1,024	736	775	627	480	509	166
Rendering	22	47	91	65	30	50	52	29	19	29	8	15	7
Burning-JBS	1	5	2	-	-	-	-	-	3	-	-	-	-
Lagoon/Sewer-JBS	2	-	-	-	-	-	1	2	-	-	-	-	-
Lagoon Gas-JBS	0	-	-	-	-	-	-	-	-	-	-	-	1
Manure-JBS	1	-	-	-	-	2	-	-	-	-	-	-	-
JBS Odors	0	-	-	-	-	-	1	1	-	-	-	-	-
Chemicals	0	-	-	-	-	1	17	2	-	-	-	-	3
Straw-WW	3	14	4	5	-	-	-	-	-	-	-	-	-
Septic	0	-	-	1	-	-	-	-	-	-	-	-	-
Compost/Sludge	0	-	1	-	-	-	-	-	-	-	-	-	-
Aeration Basin	2	4	9	14	-	-	-	-	-	-	-	-	-
Lagoon-WW	0	-	-	-	-	-	-	1	-	-	-	-	-
Sewer-WW	1	3	10	5	-	-	-	-	-	-	-	-	-
Total > 7	**32**	**73**	**117**	**90**	**30**	**53**	**71**	**35**	**22**	**29**	**8**	**15**	**11**
% of Readings >7	**2.68%**	**6.16%**	**9.79%**	**8.74%**	**2.51%**	**5.11%**	**6.48%**	**4.54%**	**2.76%**	**4.42%**	**1.64%**	**2.86%**	**6.21%**
Hotline Calls	**3**	**1**	**3**	**14**	**4**	**2**	**0**	**0**	**1**	**43**	**2**	**3**	**1**