

November 4, 2011
Mr. Patrick Alford
City of Newport Beach
3300 Newport Boulevard
Newport Beach, California 92663

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CITY OF NEWPORT BEACH

Re: Banning Ranch DEIR, Section 4.5, Hazards & Hazardous Materials

NOTE: We hereby object to approval of the project in its present form. The comments below and all references contained therein are hereby incorporated into the official record of proceedings of this project and its successors.

Summary: This public comment to the Banning Ranch DEIR addresses the issue of unregulated oil wastes and fugitive emissions of toxic air contaminants (TACs), including benzene, which is known to cause cancer in humans, methylene chloride and vinyl chloride, as well as the DEIR criteria pollutants (NOx, O3, PM10, PM2.5, CO, SO2, lead and four State-designated pollutants: visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride), all of which have been detected by field sampling and/or ambient air analyses of the Banning Ranch oil field operations, according to this DEIR. Other issues that should have been, but were not adequately addressed by this DEIR are toxic leaks and seepage from oil production, processing and storage equipment, including piping, oil sumps and oil storage tanks. Radiation exposure is also a concern, given the age of the oil field.

"One of the chemicals in crude oil that is of highest concern is benzene. It has long been known to cause rapid toxic effects, and it is carcinogenic and mutagenic. A review the toxic effects and other characteristics of benzene is available at: <http://www.atsdr.cdc.gov/toxprofiles/tp3.pdf>.

[...] Benzene in the crude oil can cause a variety of specific effects described in the recent CDC summary of benzene toxicity: ventricular fibrillation, congestive gastritis, toxic gastritis, pyloric stenosis, myalgia, kidney damage, skin irritation and burns, swelling and edema, vascular congestion in the brain, and lethal central nervous system depression.
(<http://www.atsdr.cdc.gov/toxprofiles/tp3.pdf>)"

Discussion: The Banning Ranch oil field is nearly 70 years old and was in operation before regulations for radiation exposure (radium-226, -228 and radon gas) existed. The Environmental Protection Agency's (EPA) web site discusses how radioactive wastes are formed and why they're of particular concern in older oil field operations (emphasis added).

Radioactive Wastes from Oil and Gas Drilling

[...] Radioactive wastes from oil and gas drilling take the form of produced water, drilling mud, sludge, slimes, or evaporation ponds and pits. It can also concentrate in the mineral scales that form in pipes (pipe scale), storage tanks, or other extraction equipment. Radionuclides in these wastes are primarily [radium-226](#), [radium-228](#), and [radon gas](#). The radon is released to the atmosphere, while the produced water and mud containing radium are placed in ponds or pits for evaporation, re-use, or recovery.

The people most likely to be exposed to this source of radiation are workers at the site. They may inhale radon gas which is released during drilling and produced by the [decay](#) of radium, raising their risk of lung cancer. In addition, they are exposed to alpha and gamma radiation released during the decay of radium-226 and the low-energy gamma radiation and beta particles released by the decay of radium-228. (Gamma radiation can also penetrate the skin and raise the risk of cancer.) Workers following safety guidance will reduce their total on-site radiation exposure.

Most states and federal land management agencies currently have regulations which control the handling and disposal of radionuclides which may be present in production sites. However, the general public may be exposed to TENORM [Technologically Enhanced Naturally Occurring Radioactive Materials] from oil and gas drilling when sites that were active prior to the mid-1970s, when regulations went into effect, are released for public use. It is likely that a number of these sites contain radioactive wastes. The public may also be exposed when contaminated equipment is reused in construction project."

<http://www.epa.gov/radtown/drilling-waste.html>

The DEIR Air Quality section describes the history of air, soil and water sampling and various clean-up operations of the oil field. It appears that no soil or water sampling has been done since 2001 and there is no mention of a radiation survey ever having been done. If there was such a survey, when was it done, what were the results and why wasn't it covered in either the BR DEIR or the Banning Ranch Draft Remedial Action Plan (DRAP), prepared by Geosyntec for the Project Applicants in 2009?

The DRAP's plan for abandonment and remediation of the oil field states that as much salvageable material as possible from the oil field operations will be reused and recycled. With regard to the recycling of metals, the EPA web site states the following measures should be taken:

"Now that the petroleum industry is aware of the potential for contamination, they take a number of precautions before recycling:

- Loads of scrap metal are surveyed for hidden radioactive sources and TENORM.
- Piping and equipment are cleaned before release for recycling at smelters.
- Pollution control devices, such as filters and bubblers, are installed in smelter stacks to reduce airborne radiation releases."

The EPA web site also describes the exposure risk as follows:

"TENORM contamination in oil production waste came to the attention of industry and government in 1986 when, during routine well work in Mississippi, barium sulfate scale in tubing was found to contain elevated levels of levels of radium-226, and thorium-232.

Because of concerns that some pipes may have contaminated the surrounding environment, radiological surveys were conducted by EPA's Eastern Environmental Radiation Facility. These surveys showed that some equipment and disposal locations exhibited external radiation levels above 2 mR/hr and radium-226 soil contamination above 1,000 pCi/g. Some contamination had also washed into a nearby pond and drainage ditch at one site, as well as into an agricultural field with subsequent uptake of radium by vegetation.

Because TENORM contaminated wastes in oil and gas production operations were not properly recognized in the past, disposal of these wastes may have resulted in environmental contamination in and around production and disposal facilities. Surface disposal of radioactive sludge/scale, and produced water (as practiced in the past) may lead to ground and surface water contamination.

Those at risk include: Oil and radiation waste disposal workers. Nearby residents/office workers."

There are 470 wells on Banning Ranch, most of them abandoned and likely improperly capped, 40 miles of piping, processing and treatment facilities, oil storage tanks and approximately 36 historic oil sumps, which held toxic oil wastes and were never subject to regulatory guidelines. Nor is the current method for storing and disposing of toxic oil wastes (in the form of produced oils and fluids) regulated by the U.S. or the California State EPA. No testing has ever been required and there was no discussion found of any testing of the oil field wastes in the Banning Ranch DEIR.

Oil wastes contain dangerous toxins, including benzene, toluene, arsenic, lead and barium, along with radioactive material and various treatment chemicals, such as mercury, which can be lethal at levels as low as 0.1 parts per million. Do the Project Applicants plan to do a radiation survey of the oil field operations to determine the level of radioactive wastes? If so, what is the remediation plan to deal with these wastes? Does the Project Applicant plan to test the current disposal areas being used for toxic oil wastes? Do any of the original oil sumps still exist and will they be tested?

Because of its age, the Banning Ranch oil field operation is also exempt from Coastal Commission oversight, according to the 2009 DRAP (*). As previously stated, the operation includes 470 oil wells, the majority of which have been abandoned and incorrectly plugged or capped, some 40 miles of piping (**), as well as oil production, processing and storage equipment (***) [emphasis added].

(*) Because the oil operations predated the establishment of the California Coastal Act (CCA) and other related regulatory definitions and codes, oilfield operations at Newport Banning Ranch were granted a permit exemption by the California Coastal Commission (CCC) in 1973 that covers ongoing and future oil production operations and also includes abandonments and equipment/pipeline removals and cleanup as exempt activities.

(**) **There currently remains over 40 miles of pipelines throughout the Site for the conveyance of oil, water, and gas produced from the wells to various separation and treatment facilities on the Site.** Figure 3 shows that these operations are spread across both the upland and lowland areas of the Site.

(***) **Oil operations including exploration, development, and production have been conducted continuously within the boundaries of the Site since 1944. Most of the Site has been heavily impacted by these historic oil operations and the related access roads and work areas.** The majority of the Site is still used today in active oil and gas production operations. There are currently over 470 producing/potentially producing and abandoned oil wells at the Site, together with related roads, transport pipeline networks, above-ground crude oil storage tanks and processing equipment, service buildings and other facilities (see Figure 3).

Figure 3 provides a composite picture as to the extent of the Site that has been impacted by both historic and current oil wells, pipelines, utility poles, and related facilities, as well as oilfield operation work areas like graded roads and equipment areas surfaced with gravel, asphalt, **crude oil, or crude oil tank sediments, and historic sumps which held produced oil and fluids within in-ground surface impoundments.** This map was assembled from a variety of in-field evaluations, technical maps, aerial photography, and other sources, and **illustrates that the over 65 years of oil producing operations have resulted in substantial impacts to the Site.**

http://www.city.newport-beach.ca.us/pln/CEQA_REVIEW/Newport%20Banning%20Ranch%20DEIR/Newport%20Banning%20Ranch_DEIR/Newport%20Banning%20Ranch_Appendices_DEIR_September%202011/D%20Haz%20Mat/Appendix%20D%20Part%201.pdf

A copy of Figure 3 is attached. All of the equipment associated with Figure 3 is subject to corrosion, contamination, leakage, seepage and fugitive emissions, which would be true even if the operation hadn't been situated over the Inglewood-Newport Beach fault line (DEIR Section 4.3: Geology & Soils; Seismic Environment, Faulting and Surface Rupture, page 4.3-6) and subject to hundreds of earthquakes over its lifetime.

In April of 2010, the National Defense Resources Council (NRDC), petitioned the EPA to regulate oil wastes:

“NDRC Petitions EPA to Apply Hazardous Waste Rules to Toxic Oil and Gas Waste

What is perhaps most horrifying about the current disposal of toxic waste being created by oil and gas production is that it can be dumped, without protections, right in the backyards of families across the nation, even if the family doesn't want it there, due to split estate situations. Our petition provides examples; here's one: Analysis of soil samples taken from a residential property in Texas, where pit sludge had been spread on the ground less than 300 feet from a residence, confirmed the presence of numerous hydrocarbons identified as Recognized and Suspected human carcinogens and neurotoxins (1, 2, 4 Trimethylbenzene, 1, 3, 5 Trimethylbenzene, 4-Isopropyltoluene, Acetone, Benzene, Carbon disulfide, Ethylbenzene, Isopropylbenzene, m&m Xylene, n-Butylbenzene, n-Propylbenzene, o- Xylene, sec-Butylbenzene, tert-Butylbenzene, Toluene).”

http://switchboard.nrdc.org/blogs/amall/nrdc_petitions_epa_to_apply_ha.html

In light of these findings, it becomes all the more imperative to know what toxins are in the oil wastes produced by the oil field operations on Banning Ranch.

With regard to fugitive emissions, studies show that the majority of them are not from refinery oil stacks but from unintentional leaks in equipment such as tubing, valves, flanges and hatches.

“Fugitive emissions are unintentional leaks of gases. This may occur from breaks or small cracks in seals, tubing, valves or pipelines, as well when lids or caps on

equipment or tanks have not been properly closed or tightened. When oil and natural gas vapors escape via fugitive emissions, methane as well as volatile organic compounds (VOCs) and any other contaminants in the gas (e.g., hydrogen sulfide) are released to the atmosphere.

Recently, while on a tour of oil and gas field in Weld and Adams counties, a team of high-tech Environment Protection Agency investigators used an infrared camera to look for fugitive emissions, which are normally invisible to the naked eye. They aimed their camera at pipelines, valves and hatches atop storage tanks. The EPA regulators found numerous cases of fugitive emissions. According to a story in the Rocky Mountain News, "in one case, an open hatch atop a storage tank was gushing such a tremendous volume of emissions into the air that one participant jokingly compared it to the eruption of Mount Vesuvius near the ancient city of Pompeii."

<http://www.earthworksaction.org/airpollutionsources.cfm>

Ambient air analyses have been done for the DEIR criteria pollutants, but such an analysis could not be found for benzene, a known carcinogen and highly toxic air contaminant. Why haven't ambient air analyses been done for benzene and why is there no mention in the DEIR of the known health hazards associated with benzene and the other criteria pollutants? Of course, leaks and fugitive emissions are more likely to occur with old equipment.

According to the Banning Ranch DRAP, during field sampling, benzene, methylene chloride and vinyl chloride were detected and exceeded standards (MCLs) in the groundwater on Banning Ranch. [Banning Ranch DRAP, Table 4: Range of Groundwater Sample Results-EA (2001)]

From the Occupational Health & Safety Administration (OSHA) on benzene:

"Benzene is a component of products derived from coal and petroleum and is found in gasoline and other fuels. Benzene is used in the manufacture of plastics, detergents, pesticides, and other chemicals. Research has shown benzene to be a carcinogen (cancer-causing). With exposures from less than five years to more than 30 years, individuals have developed, and died from, leukemia. Long-term exposure may affect bone marrow and blood production. Short-term exposure to high levels of benzene can cause drowsiness, dizziness, unconsciousness, and death."

<http://www.osha.gov/SLTC/benzene/>

And this article from Sciencecorps [emphasis added]:

Crude Oil Health Hazards

Toxic Effects: Crude oil's toxic ingredients can damage every system in the body: respiratory system, nervous system, including the brain, liver, reproductive/urogenital system, kidneys, endocrine system, circulatory system, gastrointestinal system, immune system, sensory systems, musculoskeletal system, hematopoietic system (blood forming), skin and integumentary system, metabolism.

Damage to these systems can cause a wide range of diseases and conditions. [...] The chemicals can impair normal growth and development through a variety of mechanisms, including endocrine disruption and direct fetal damage. They cause mutations that may lead to cancer and

multi-generational birth defects. Some are known carcinogens, such as benzene (CDC, 1999).

[...] **One of the chemicals in crude oil that is of highest concern is benzene**, because it has long been known to cause rapid toxic effects, and it is carcinogenic and mutagenic. A review the toxic effects and other characteristics of benzene is available at:

<http://www.atsdr.cdc.gov/toxprofiles/tp3.pdf>.

[...] **Benzene in the crude oil can cause a variety of specific effects described in the recent CDC summary of benzene toxicity: ventricular fibrillation, congestive gastritis, toxic gastritis, pyloric stenosis, myalgia, kidney damage, skin irritation and burns, swelling and edema, vascular congestion in the brain, and lethal central nervous system depression.**

(<http://www.atsdr.cdc.gov/toxprofiles/tp3.pdf>).

[...] In susceptible individuals such as children and those with health problems, moderate or low level exposures can cause effects usually associated with high exposures.”

<http://www.sciencecorps.org/crudeoilhazards.htm>

A landmark study by the University of Texas, School of Public Health in 2010, showed that benzene exposure via air pollution increased the incidence of spina bifida in children:

“Maternal Exposure to Ambient Levels of Benzene and Neural Tube Defects among Offspring: Texas, 1999–2004

Objective: Our goal was to conduct a case–control study assessing the association between ambient air levels of benzene, toluene, ethylbenzene, and xylene (BTEX) and the prevalence of NTDs among offspring.

Methods: The Texas Birth Defects Registry provided data on NTD cases (spina bifida and anencephaly) delivered between 1999 and 2004. The control group was a random sample of unaffected live births, frequency matched to cases on year of birth. Census tract–level estimates of annual BTEX levels were obtained from the U.S. Environmental Protection Agency 1999 Assessment System for Population Exposure Nationwide. Restricted cubic splines were used in mixed-effects logistic regression models to determine associations between each pollutant and NTD phenotype.

Results: Mothers living in census tracts with the highest benzene levels were more likely to have offspring with spina bifida than were women living in census tracts with the lowest levels (odds ratio = 2.30; 95% confidence interval, 1.22–4.33). No significant associations were observed between anencephaly and benzene or between any of the NTD phenotypes and toluene, ethylbenzene, or xylene.

Conclusion: In the first study to assess the relationship between environmental levels of BTEX and NTDs, we found an association between benzene and spina bifida. Our results contribute to the growing body of evidence regarding air pollutant exposure and adverse birth outcomes.”

<http://ehp03.niehs.nih.gov/article/info%3Adoi%2F10.1289%2Fehp.1002212>

Conclusion: Up-to-date and comprehensive testing for TAC pollutants, oil waste toxins and radioactive wastes must be done before any DEIR can be considered complete and certainly before it can be approved. Please advise as

to whether this testing will be done and if it will be done by independent consultants with no prior or current contractual relationship with either the Project Applicants or the City in order to verify the reliability and accuracy of the results. Also, please provide a list of city or country experts who have independently reviewed each section of the Project Applicant's DEIR.

Thank you for your attention to these areas of deep concern. My strongest recommendation is that the Hazards and Hazardous Materials section of the DEIR be redone and the revised version documented with all of the necessary testing (whether current regulations require it or not) and a plan for the remediation required to safeguard the Project workers, the adjacent residents, the community college currently under construction, the grade school (Carden Hall) and the children and families who will use the City's proposed soccer fields, baseball diamond and tennis courts, and especially the residents who will be living in and above an operational oil field.

Sincerely,

Suzanne Forster
8 Summerwind Court
Newport Beach, CA

Dorene Christensen
19 Baruna Court
Newport Beach, CA