



APWL Proposed Change Document
Proposed June 6, 2016

APWL Proposed Change Document: Delisting

Nickel – Dallas, TX

Prepared by
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Office of the Executive Director

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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APWL Proposed Change Documentation - Delisting

Table 1. Area Under Consideration

APWL	0401
County	Dallas
City	Dallas
TCEQ Region	Region 4 – Dallas/Fort Worth
Pollutant(s)	Nickel
Exceedance Type (Health/Odor)	Long-Term Health
Year Added to APWL	2004

Background

The Texas Commission on Environmental Quality (TCEQ) established the Air Pollutant Watch List (APWL) to address areas of the state where air toxics were persistently monitored at levels of potential concern. The TCEQ uses the APWL to reduce air toxic levels by focusing its resources on areas in the state with the greatest need. A portion of Dallas was added to the APWL to address persistent, elevated annual average concentrations of nickel at the Morrell stationary monitor, located at 3049 Morrell Avenue.

Ambient nickel concentrations are compared to the TCEQ-derived air monitoring comparison values (AMCVs) to determine their potential to cause adverse health and welfare effects. AMCVs are set well below levels at which adverse health effects are reported in the scientific literature to provide a margin of safety. Therefore, exceedance of an AMCV does not necessarily indicate that adverse health effects or odors would be expected. The current health-based short-term (1-hour) and long-term AMCVs are $1.1 \mu\text{g}/\text{m}^3$ and $0.059 \mu\text{g}/\text{m}^3$, respectively. It is important to note that it is not appropriate to compare 24-hour canister samples to the long-term AMCV, because the long-term AMCV is based on a lifetime of exposure. It is only appropriate to compare short-term canister samples to the short-term AMCV and long-term sampling data (at least one year, but most appropriately the lifetime average) to the long-term AMCV.

Nickel is a metal that is used extensively in making stainless steel and other alloys. Nickel is emitted into the air from a wide variety of industrial sources, such as iron and steel foundries, coal- and oil-fired power plants, and electroplating facilities. Since carcinogenic potential forms the basis of the long-term AMCV for nickel, it is important to note that while TCEQ considers nickel compounds as a group to be “carcinogenic to humans” via inhalation, there is at most only “suggestive evidence of carcinogenic potential” for metallic nickel, which is the form that was primarily emitted in the Dallas APWL 0401 area. The TCEQ previously identified DC Bumper (formerly known as Dal Chrome), an automotive chrome bumper recycling facility located predominantly upwind from the Morrell site, as the primary source of nickel emissions impacting the Dallas Morrell stationary monitor. DC Bumper went out of business in November 2013.

APWL Information

Boundary Designation

The APWL 0401 area includes the geographical area of Dallas north of McGowan Street, south of the Trinity River, east of Cedar Crest, and west of Sargent Road and the Union Pacific Railroad as it extends north to the Trinity River (Figure 1). As Figure 1 shows, this particular APWL area contains one company, DC Bumper, formerly Dal Chrome, Inc. Although it is now closed, DC Bumper was not subject to the requirement to submit an annual emissions inventory. The company had been inspected annually by the City of Dallas and had not been issued any notices of violation.



Figure 1. Boundary designation of the Dallas APWL area

Designated Land Use and Proximity to Residential Areas and High-Traffic Roadways

The majority of the area included in the Dallas APWL 0401 is industrial; however, there are some residences located within the APWL boundary (Figure 2). Some of these homes are also located in close proximity to the old DC Bumper site, the primary nickel source that had been located within the APWL area. The Morrell monitor is located on the roof of a meat packing facility, which is across the street from the now closed DC Bumper

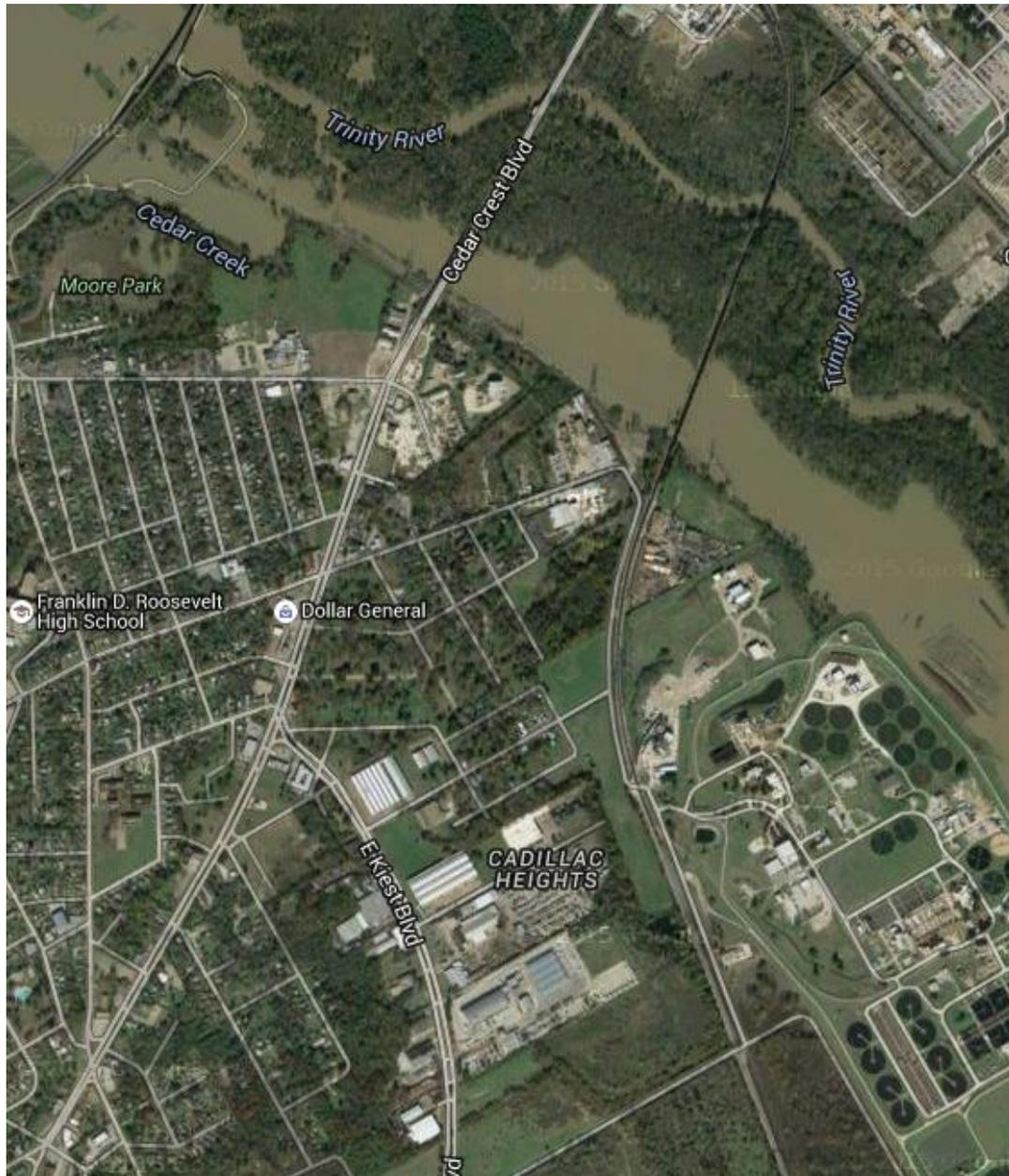


Figure 2. Satellite imagery showing the location of residential and industrial sections in the Dallas APWL 0401 area.

Evaluation

Ambient Air Monitoring Data

Stationary Monitoring

The City of Dallas Air Pollution Control Section operates the sampler located at the Morrell air monitoring site (AQS number 481130018), located at 3049 Morrell Avenue, Dallas, Texas. The monitoring site currently contains a high-volume sampler that collects particulate matter with diameter less than 10 micrometers in size (PM₁₀) trace metals on a filter over 24-hours, once every six days. A laboratory analysis is performed on each 24-hour sample to speciate the PM₁₀ metal particles collected, enabling the TCEQ to determine the portion of the PM₁₀ particulate matter that is nickel.

From 1987 to 2010, total suspended particulate (TSP) was collected and the nickel portion of the TSP was speciated and measured. For TSP data, the monitored nickel concentrations incorporated all particle size fractions less than 50 micrometers (and contained size fractions which are not in the respirable fraction) of the nickel particulate. Due to consistently elevated TSP nickel concentrations, the TCEQ replaced the TSP sampler at the Morrell site with a PM₁₀ sampler on August 17, 2010. The new sampler takes measurements that better represent the particle size fractions that could be inhaled (respirable particle size fractions) and are more directly comparable to the long-term nickel AMCV, which is also based on respirable particle size fractions of nickel particulate.

The long-term AMCV of 0.059 µg/m³ for respirable nickel particles was derived based on risk of developing lung cancer following long-term, high-dose exposure to carcinogenic forms of nickel in occupational workers. Therefore, comparing nickel PM₁₀ (post 2010) or TSP data (pre 2010) to the long-term AMCV for respirable nickel particles may be overly conservative for several reasons, including: differences in PM size fractions; differences in forms of nickel; and differences in health effects evaluated (i.e., non-carcinogenic and carcinogenic effects). Detailed information about the long-term AMCV and noncarcinogenic chronic AMCV for nickel is available in the [nickel Development Support Document](#) (DSD).

The air monitoring data from the Morrell site are representative of total nickel and do not specify the specific forms of nickel. However, based on the type of facility, DC Bumper was known to emit mainly metallic nickel, which was expected to be the predominant nickel emissions source in the vicinity of the Morrell site until the facility closed in November 2013.

Nickel TSP Monitoring, 1987-2010

Elevated annual nickel TSP levels were detected at the Morrell site from 1987-2010 (Figure 3, showing data from 1993-2010). Annual average nickel concentrations have decreased since 1995, and these reductions were attributed to actions taken by DC Bumper.

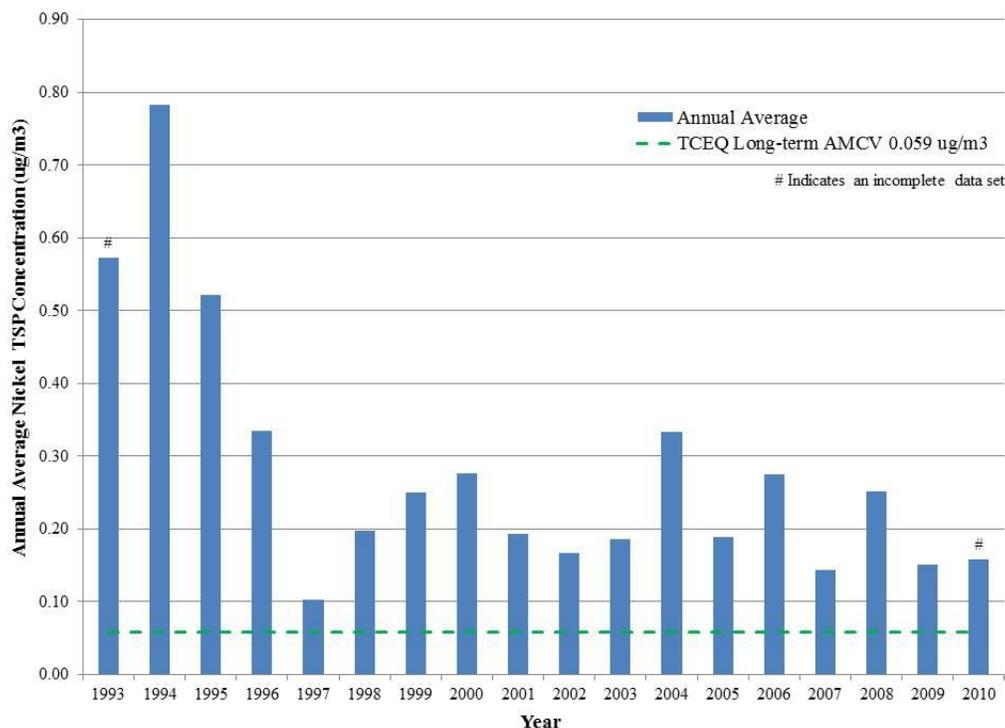


Figure 3. Nickel TSP trends from 1993 to 2010 as measured at the Morrell monitor

Collocated TSP and PM_{2.5} Monitoring Study, 2009-2010

In order to address the issue of particle size at the Morrell site, and to better characterize the more toxicologically relevant nickel PM fraction for risk assessment of nickel exposure, a special monitoring study was conducted from April 2009 to August 2010 at the Morrell site. As mentioned above, only TSP samples have historically been collected at this site. During the special monitoring study, however, a new PM_{2.5} monitor was collocated with the TSP monitor. PM_{2.5} represents fine particulate, which is a more toxicologically relevant size fraction as it can be taken deep into the lungs.

The average reported nickel PM_{2.5} concentration of 0.010 µg/m³, collected at the Morrell site from April 1, 2009 to August 6, 2010, was below the long-term AMCV of 0.059 µg/m³ for ambient nickel. Reported 24-hour nickel PM_{2.5} levels ranged from non-detect to 0.065 µg/m³. Based on 39 pairs of detected PM_{2.5} and TSP levels, the TCEQ Toxicology Division (TD) determined that, on average, 9.49% of the total nickel in TSP was in the PM_{2.5} fraction. The TD concluded that the annual PM_{2.5} concentrations of nickel were likely below TCEQ's long-term AMCV of 0.059 µg/m³ for nickel since 1996. For more information, please refer to the [2010 Health Effects Review for Region 4, Dallas/Fort Worth](#).

Nickel PM₁₀ Monitoring, 2010-present

In 2010, the TSP sampler was replaced with a PM₁₀ sampler, and annual averages were then calculated based on the more appropriate respirable particle size (Figure 4). Annual average nickel PM₁₀ concentrations were above the long-term AMCV in 2011, but these levels decreased

in 2012 and decreased significantly after the primary source went out of business in 2013. The 2015 annual average nickel concentration of $0.0014 \mu\text{g}/\text{m}^3$ was well below the long-term AMCV of $0.059 \mu\text{g}/\text{m}^3$.

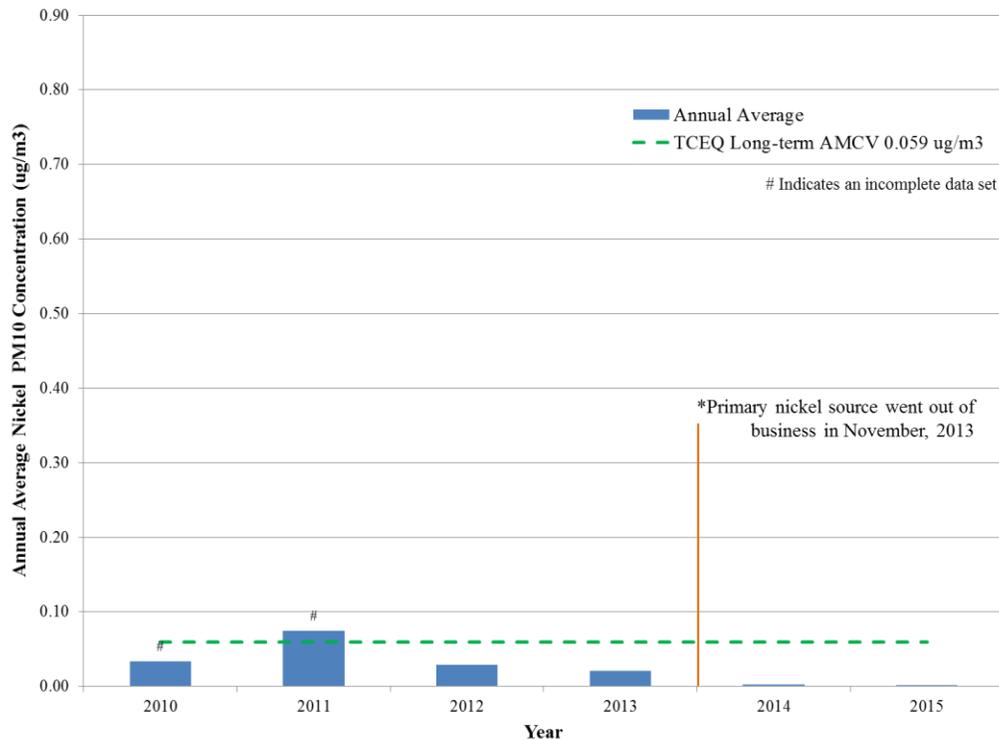


Figure 4. Nickel PM₁₀ trends from 2010 to 2015 as measured at the Morrell monitor

Toxicology Division's Health Effects Review of Ambient Monitoring

The August 3, 2015, health effects review of the 2014 ambient air network monitoring data from Region 4, Dallas/Fort Worth, highlighted the decrease in measured nickel PM₁₀ concentrations at the Morrell site following the closure of the primary emitter. The TD stated that the 2015 annual average concentration of nickel, $0.0014 \mu\text{g}/\text{m}^3$, was below the long-term AMCV of $0.059 \mu\text{g}/\text{m}^3$ for respirable carcinogenic forms of nickel (i.e., PM₁₀) and would not be expected to cause chronic adverse health or vegetation effects. The TD recommended removal of nickel and the Dallas area from the TCEQ's APWL because the available data together with the differences in the forms of nickel and the fact that the facility closed in November of 2013 indicate that removal from the APWL is appropriate.

APWL Proposed Change Recommendation

Several factors support the delisting of nickel and the Dallas area:

- Stationary monitoring has shown that the 2012 – 2015 nickel PM₁₀ annual averages are below the conservative long-term AMCV of $0.059 \mu\text{g}/\text{m}^3$ for respirable nickel particles.
- Data from collocated PM_{2.5} and TSP monitors collected during a special monitoring study from April 2009 to August 2010 revealed that 9.49% of the total nickel in TSP was in the

PM_{2.5} fraction. The TD concluded that the annual PM_{2.5} concentrations of nickel were likely below TCEQ's long-term AMCV of 0.059 µg/m³ for nickel since 1996.

- The primary source of nickel, DC Bumper, closed in November, 2013, and measured nickel concentrations decreased accordingly.

Taking into consideration that the ambient monitoring data shows that nickel concentrations are no longer above the long-term AMCV and that the primary nickel emitter is no longer operating, the TD recommends that nickel and the Dallas area be removed from the APWL.

Appendix

Public Comment Period

The TCEQ will accept comments on the proposed delisting of Dallas from the APWL, which is currently listed for the air toxic nickel. Interested persons may send comments to APWL@tceq.texas.gov or to the APWL coordinator at the following mailing address:

Jessica Myers, Ph.D.
Air Pollutant Watch List Coordinator
Texas Commission on Environmental Quality
MC 168
P.O. Box 13087
Austin, TX 78711

The comment period begins on June 6, 2016, and the TCEQ will accept comments through July 8, 2016. Any questions regarding the proposed delisting or the APWL process may be forwarded to Dr. Myers by email at APWL@tceq.texas.gov or by telephone at (512) 239-1795 or (877) 992-8370.