Water Quality Report

This report was prepared using data obtained from runoff water analysis conducted by Eurofins Calscience, a laboratory accredited for environmental testing. The analysis was reviewed by personnel at the City of Escondido Hale Avenue Resource Recovery Facility (HARRF) laboratory to ensure the accuracy and integrity of the results.

SDG&E Battery Fire

571 Enterprise Street

Start 9/5/2024 12:09

Incident summary

On September 5 at 12:09, units from the Escondido Fire Department responded to structure fire at the SDG&E battery storage facility at 571 Enterprise Street. Upon arrival, crews found an active fire in a Lithium-Ion battery bank. Due to the specific hazards of such fires, a defensive strategy was employed, focusing on protecting adjacent structures containing additional batteries by applying water to those adjacent structures.

Sampling

- The samples were collected on **September 5, 2024 at 18:30 and again at 18:35** and were sent to a 3rd party laboratory for analysis
- The pH of the water sample was recorded at **7.47**, with a temperature of **26.8°C** at the time of testing.

Laboratory Analysis

- The analyses were performed by **Eurofins Calscience**, a laboratory with accreditation for environmental testing (EPA and SW846 protocols were followed).
- Samples were tested for various metals, including **barium, molybdenum, vanadium, copper, zinc, and cobalt**.

Results

- **Barium** concentration was found at **0.115 mg/L**, while the detected levels of **molybdenum**, **vanadium**, **copper**, **zinc**, and **cobalt** were all within acceptable ranges based on the applied methodologies.
- No detectable concentrations of other potentially harmful metals such as **cadmium**, **antimony**, **beryllium**, and **lead** were observed.

Quality Control

- The report indicates thorough quality control (QC) measures were applied, including spike recovery tests to ensure the accuracy and reliability of the results.
- For all tested metals, the recovery rates were within acceptable limits, confirming that the sampling and testing processes were effective.

Analysis

- **Water Quality**: The pH and metal concentrations suggest the water quality was within normal or acceptable ranges for most of the analyzed contaminants. The absence of toxic metals like **cadmium** and **lead** is a positive outcome.
- **Environmental Impact**: The low levels of metals like **barium**, **copper**, and **zinc** indicate that the runoff water does not pose significant environmental hazards.

pH and Temperature:

- **pH Level**: The pH of the water sample was recorded at **7.47**, which is neutral and within the acceptable range for general water quality standards (6.5 to 8.5 for drinking water). This suggests that the water was neither too acidic nor too alkaline.
- **Temperature**: The sample temperature was **26.8°C**, which is within a typical range for water at ambient temperatures. However, temperature could affect the solubility and mobility of metals, especially if the water is in a warmer environment.

Concentration of Detected Metals

- **Barium**:
    - Detected concentration: **0.115 mg/L**.
    - **Barium** is naturally occurring but can enter water through industrial discharge or from drilling operations. According to the **EPA's maximum contaminant level (MCL)** for barium in drinking water, the limit is **2 mg/L**. The detected level of **0.115 mg/L** is well below this threshold, indicating no significant risk from barium in this water sample.
- **Molybdenum**:
    - Detected concentration: **0.0075 mg/L**.
    - **Molybdenum** is an essential trace element, but elevated levels can be harmful to aquatic life. The detected concentration is relatively low and does not raise any immediate concerns. The **WHO** suggests a guideline of **0.07 mg/L** in drinking water, which makes this result favorable.
- **Vanadium**:
    - Detected concentration: **0.0051 mg/L**.
    - **Vanadium** is present in some natural water sources but can also come from industrial activities. There is no widely established regulatory limit for vanadium in drinking water, but concentrations below **0.01 mg/L** are generally considered safe. The level in the sample is well within this range.

- **Copper**:
    - Detected concentration: **0.0216 mg/L**.
    - The **EPA** action level for copper in drinking water is **1.3 mg/L**. The detected concentration of copper in the sample is far below this limit, indicating that the water is safe from copper-related toxicity.
- **Zinc**:
    - Detected concentration: **0.0767 mg/L**.
    - **Zinc** is essential for human health, but at higher concentrations, it can impart a metallic taste to water and cause health issues. The **EPA** has set a secondary maximum contaminant level (SMCL) of **5 mg/L** for zinc, primarily for aesthetic concerns. The concentration in this sample is well below this level, indicating no risk from zinc contamination.
- **Cobalt**:
    - Detected concentration: **0.0014 mg/L**.
    - **Cobalt** is another essential element but can be toxic at higher levels. There are no specific regulatory limits for cobalt in drinking water, but the detected amount in the sample is extremely low and does not pose any immediate health concerns.

Non-Detected Metals

- **Cadmium**, **antimony**, **beryllium**, **thallium**, **nickel**, **silver**, **arsenic**, **lead**, **selenium**, and **chromium** were **not detected** in the samples. This is a positive result as these metals are known for their potential toxicity and environmental persistence. The absence of these contaminants suggests that the water is not exposed to significant industrial pollution or corrosion from pipes that could introduce these metals.

Mercury Analysis

- **Mercury** was **not** detected in the samples, which is significant because mercury is highly toxic, especially in its methylated form. Even small amounts of mercury can have serious health and ecological impacts. The non-detect result (ND) indicates that the water is free from mercury contamination.

Comparative Toxicity and Environmental Impact

- The presence of trace amounts of metals like **zinc**, **copper**, and **barium** is typical in urban environments where water can come into contact with various materials and sediments. However, the levels detected in this sample do not indicate a significant environmental or health hazard.
- The absence of **toxic metals** such as **lead**, **cadmium**, and **mercury** further support that this water is unlikely to contribute to significant contamination of the environment.
- Laboratory personnel at the Hale Avenue Resource Recovery Facility (HARRF) laboratory were consulted regarding the results of the runoff water analysis and confirmed that there were no concerns with this water entering the environment.

Conclusion:

The analysis of the samples collected from the runoff water suggests that the water quality is within acceptable limits for most contaminants, especially when considering public health standards for drinking water. The low levels of metals detected, combined with the absence of more toxic elements like **lead** and **cadmium**, suggest that the water poses minimal risk both to human health and the environment.

Information Requests:

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