ΕΝΗΜΕΡΩΤΙΚΟ ΣΗΜΕΙΩΜΑ

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ΘΕΜΑ: Καταπολέμηση ατμοσφαιρικής ρύπανσης στα διυλιστήρια

Από την πρόσφατη επίσκεψή μου στην Αμερική και τη συνεργασία με τους αρμόδιους εμπειρογνώμονες διαμορφώθηκαν οι τελικές προτάσεις για την πραγματοποίηση των αναγκαίων εξειδικευμένων μετρήσεων-ελέγχων σε συγκεκριμένα σημεία κάθε διυλιστηρίου, που θα παρέχουν αδιάγραμμα επιστημονικά τεκμήρια για τη πρόκληση ατμοσφαιρικής ρύπανσης.

Συγκεκριμένα, επισημάνθηκαν και ιεραρχήθηκαν τα πιο ευαίσθητα σημεία πηγές ρύπανσης κάθε διυλιστηρίου και διαμορφώθηκε το αναλυτικό πρόγραμμα εκτέλεσης των μετρήσεων-ελέγχων (επισυνάπτεται).

Ειδικά για τη Μότορ Οιλ κρίνεται αναγκαία η πραγματοποίηση μετρήσεων-ελέγχων σε οκτώ σημεία του διυλιστηρίου. Σε πρώτη εκτίμηση, η μονάδα αποθέωσης πρέπει να αποτελεί την κύρια πηγή οσμών, λόγω κακής λειτουργίας και σχεδιασμού.

Αφού τεκμηριωθούν όλα τα προβληματικά σημεία κάθε διυλιστηρίου θα υποβληθούν εναλλακτικές προτάσεις για βελτίωση της κατάστασης, λαμβάνοντας υπόψη τον υπολογισμό του κόστους/οφέλους. Τέλος θα υποβληθούν προτάσεις αναπροσαρμογής των περιβαλλοντικών όρων, όπου αυτό κρίνεται αναγκαίο.

Ο ΠΡΩΘΥΠΟΥΡΓΟΣ

Αντίγραφο

οπου ι. Λειτουργία μα' ευνομήων.
HIGH PRIORITY SOURCES

Based upon the first phase several sources were determined to be potentially important emissions sources and could not be fully evaluated in phase II without additional testing. The sources include the following organized by refinery:

MOTOR OIL:
- Sulfur Emissions due to the bypass of sour water stripper to incinerator
- Reduced sulfur species from Sulfur recovery unit to due incinerator controls
- Sulfur Recovery Unit efficiency
- Fugitive hydrocarbon emissions due to leaking components
- Hydrocarbon and odor emissions due to uncovered trenches and API separator at the waste water treatment facility and land disposal of waste water sludge
- Catalytic Cracking Unit particulate and nickel emissions
- Odors from Marine Terminal Trench
- Process heaters NOx, SOx Particulate matter and air toxic emissions

EKO:
- Sulfur Recovery Unit efficiency (97%)
- Process heaters NOx, SOx Particulate matter and air toxic emissions
- Fugitive hydrocarbon emissions due to leaking components

ELDA:
- Sulfur Recovery Unit efficiency (97%)
- Catalytic Cracking Unit particulate and nickel emissions
- Process heaters NOx, SOx Particulate matter and air toxic emissions
- Fugitive hydrocarbon emissions due to leaking components

PETROLA:
- Fugitive hydrocarbon emissions due to leaking components
- Hydrocarbon and odor emissions due to uncovered trenches and API separator at the waste water treatment facility

The scope of activity in phase II will include the emissions estimates for all process units in each of the refineries using emissions factors derived from US data bases as provided in Table 1 for normal and hazardous air pollutants using the design and operation data collected in phase I. In addition for the high priority sources identified above, additional testing and evaluation will be undertaken. The following section describes the testing proposed for phase II for each type of major process unit including measurements, measurement protocols, refinery operation during tests, data analysis, other requirements, and task responsibilities.
SULFUR RECOVERY UNITS

Measurements:
- Stack emissions of COS, H2S, SO2, CS2, mercaptans, and Total Reduced Sulfur, Oxygen, Carbon Monoxide
- Feed Stream characteristics to Sulfur Recovery Unit (total sulfur input)
- Crude Characteristics (sulfur content)
- Sulfur recovery efficiency (%)

Measurement Protocols:
- Total Reduced Sulfur trends for 3-4 days over the course of one month to check for variability of emissions from unit
- EPA method 15/16
- Onsite GC with SCD
- API protocol for Sulfur Recovery Unit performance

Refinery Operation and Conditions:
- High Sulfur Crude Refinery
- Full Capacity Operation
- Refinery operation typical based upon product split

Data Analysis
- Calculate the sulfur recovery efficiency of the SRU
- Estimate Emission factors for annual operation of the SRU
- Compare emission factors with US database

Requirements
- Coordinated ambient air monitoring campaign
- Self contained breathing apparatus equipment and training for sampling team
- Start with ELDA refinery and then move to more complicated refineries

Responsibilities:
- Specification of continuous emissions sampling and monitoring - US
- Procurement and construction of continuous emissions sampling and monitoring - Greece
- Definition of sampling and analysis protocols - US
- Calibration standards supplied - US
- Sampling trains specification - US
- Procurement and construction of sampling trains - Greece
- Specification of analytical protocols - US
- Sample Analysis following analytical protocols - Greece
- Site specific test plan development including job walk, sampling port definition, site specific test plan development - US
- Sampling port construction - Greece
- Sampling - Greece
- Training for Sampling and CEM operation - US
- Development of data reporting Excel spreadsheets - US
• Collection of refinery operation information during sampling - Greece
• Data Analysis - US
• Data quality and completeness oversight for first refinery tested - US
• Data quality and completeness oversight for subsequent refineries tested - Greece
• Reporting data analysis - US
• Reporting of procedures, testing results, and observations - Greece
FUGITIVES:

Measurements:
- Limited Leak detection campaign using OVA

Measurement protocols
- Leak detection protocols in US regulations (e.g., from US Code of Federal Regulations for Refinery MACT 1)
- Use statistical analysis and practical sampling time (one day per refinery) to define extent of testing

Refinery Operation and Conditions:
- High Sulfur Crude Refinery
- Full Capacity Operation
- Refinery operation typical based upon product split

Data Analysis
- Estimate annual inventory of fugitive emissions using US emissions factors for number of components
- Estimate annual emissions estimates for the limited number of components based upon leak detection campaign
- Compare emissions with US emissions factors
- Estimate annual Emission inventory for refinery fugitives using revised emissions factors and percentage of leakers.

Requirements:
- Coordinated ambient air monitoring campaign with dispersion modeling from sources

Responsibilities
- Specify OVA instrumentation - US
- Dispersion Modeling - US
- Develop field sampling protocol - US
- Site specific test plan development including job walk, sampling port definition, site specific test plan development - US
- Purchase OVA instrumentation - Greece
- Training on use of OVA instrumentation - US
- Conduct leak detection campaign - Greece
- Collection of refinery operation information during sampling - Greece
- Overseeing Sampling campaign for first refinery - US
- Overseeing sampling campaign for subsequent refineries - Greece
- Quality Assurance - Greece
- Data Analysis - US
PROCESS HEATERS

Measurements:
- Stack sampling for NOx, SOx, CO, particulate matter, smoke number, Oxygen, total hydrocarbon,

Measurement protocols:
- Select representative and worst case stacks for testing based upon review of design and operation of process heaters.
- Test two process heaters at each refinery
- Continuous Emission Monitors
- EPA Method 5 for particulate matter
- Bacharach smoke number
- WSPA/ API and EPA/CARB protocols for trace organics and metals

Refinery Operation and Conditions:
- Typical Crude
- Full Capacity Operation
- Refinery operation typical based upon product split

Data Analysis
- Estimate annual emissions from US Emission Factor Data Base
- Estimate annual emissions from tested process heaters
- Compare Emissions factors to US emissions database
- Estimate annual emissions from untested process heaters using combination of US emissions factors and tested units
- Identify priority process heater sources for larger more complete Sampling and analysis for toxic components
- Define sampling and analysis protocols for toxics testing campaign in next phase.

Responsibilities:
- Specification of continuous emissions sampling and monitoring -US
- Procurement and construction of continuous emissions sampling and monitoring -Greece
- Definition of sampling and analysis protocols -US
- Calibration standards supplied - US
- Sampling trains specification - US
- Procurement and construction of sampling trains - Greece
- Specification of analytical protocols - US
- Sample Analysis following analytical protocols - Greece
- Site specific test plan development including job walk, sampling port definition, site specific test plan development - US
- Sampling port construction - Greece
- Sampling - Greece
- Training for Sampling and CEM operation - US
- Development of data reporting Excel spreadsheets - US
- Data Analysis - US
- Collection of refinery operation information during sampling - Greece
- Data quality and completeness oversight for first refinery tested - US
- Data quality and completeness oversight for subsequent refineries tested - Greece
- Reporting data analysis - US
- Reporting of procedures, testing results, and observations - Greece
- Develop sampling and analysis protocols for trace organics and metals for subsequent tests for air toxics - US
WASTE WATER/SLUDGE DISPOSAL

Measurements:
• Analysis of key organic and water streams for benzene
• Develop system characterization for waste water treatment with definition of all uncovered equipment
• Sniffer (OVA) screening of units
• Define sludge disposal activities at each refinery

Data Analysis
• Estimate of emissions of Benzene and other volatile organic compounds from waste water treatment facilities
• Estimate emissions for covered (controlled) waste water treatment facilities
• Compare emissions estimates with US emissions
• Define US options for sludge disposal

Responsibilities:
• Site specific test protocols - Greece
• Define current sludge management and disposal procedures - Greece
• Measurement campaign at refineries - Greece
• Data Analysis - US
CATALYTIC CRACKING UNITS (CCU)

Measurements:
- Stack emissions of particulate matter, nickel and carbon monoxide, oxygen, total hydrocarbons
- Nickel in equilibrium recirculated catalysis

Measurement Protocols:
- EPA method 5 and multimetals train with ICP analysis for Nickel
- Continuous Emissions monitoring

Refinery Operation and Conditions:
- High Sulfur Crude Refinery
- Full Capacity Operation
- Refinery operation typical based upon typical product production rates

Data Analysis
- Estimate annual emissions from CCU
- Compare Emissions factors to US emissions database for CCUs

Responsibilities:
- Specification of continuous emissions sampling and monitoring - US
- Procurement and construction of continuous emissions sampling and monitoring - Greece
- Definition of sampling and analysis protocols - US
- Calibration standards supplied - US
- Sampling trains specification - US
- Procurement and construction of sampling trains - Greece
- Specification of analytical protocols - US
- Sample Analysis following analytical protocols - Greece
- Site specific test plan development including job walk, sampling port definition, site specific test plan development - US
- Sampling port construction - Greece
- Sampling - Greece
- Training for Sampling and CEM operation - US
- Development of data reporting Excel spreadsheets - US
- Collection of refinery operation information during sampling - Greece
- Data Analysis - US
- Data quality and completeness oversight for first refinery tested - US
- Data quality and completeness oversight for subsequent refineries tested - Greece
- Reporting data analysis - US
- Reporting of procedures, testing results, and observations - Greece