VAPOR INTRUSION: QUICK ASSESSMENT AND MITIGATION IN A UNIVERSITY BUILDING

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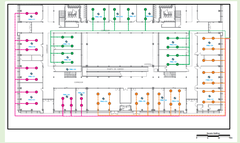
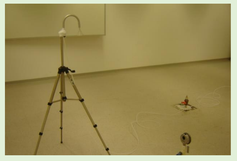
VAPOR INVESTIGATION

01 month

- Installation of 22 sub-slab ports
- 21 sub-slab samples (TO-17)
- 21 indoor air samples (TO-17)
- Adsorbents (Tenax, Carboxen 1000, Carbosieve).



SUB-SLABS PORTS DISTRIBUTION

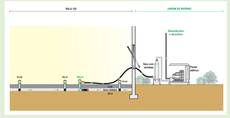


INDOOR AIR SAMPLING

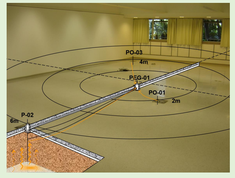
SSD PILOT TEST

01 month

- Pilot test performed by Geoklock team: (01 extraction unit, 01 extraction point, 03 observation wells, 03 off-gas samples)



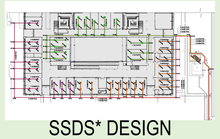
PILOT TEST APPROACH



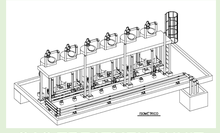
SSD IMPLEMENTATION

06 months

- Engineering design of SSDS* and Construction management by Geoklock team.
- SSDS Commissioning &Start-up, operation by Geoklock team.



SSDS* DESIGN



GAS TREATMENT UNIT

CONSTRUCTION PHASE 1

CONSTRUCTION PHASE 2

VACUUM MEASUREMENT

SLAB CUTTING

EXTRACTION POINT

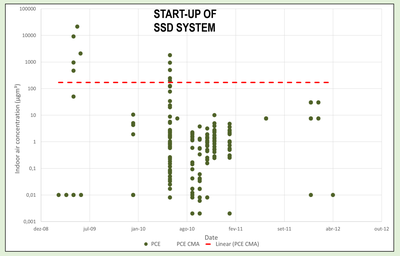
GAS-LIQUID SEPARATOR

EXTRACTION UNIT

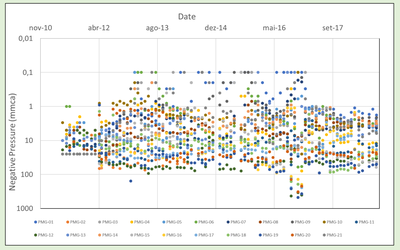
INDOOR AIR MONITORING

04 semesters

- Monitoring of indoor air
- Monitoring of sub-slab vacuum



AIR PCE (µg/m³) CONCENTRATION



SUB-SLAB PRESSURE MONITORING

BACKGROUND / OBJETIVES

- An investigation was conducted to evaluate the vapor intrusion in 21 classrooms.
- The sub-slab sampling and indoor air sampling results confirmed intrusion in some environments.
- Sanitary Surveillance Agency suspended the use those classrooms until immediate risk elimination.
- In order to make the classrooms safe, a vapor intrusion mitigation system was implemented.

RESULTS / LESSONS LEARNED

- The SSDS* was implemented in short time. Impacts to the users and the day-to-day operation were minimal.
- The analytical results of the indoor air samples associated to the negative pressure measurements in the sub-slab proved the effectiveness of the mitigation action.
- The strategy of starting the operation from the most critical environments was crucial to improve the full-scale project. Preferential pathways under the slab were found: underground electric ducting. Design adjustments were made in time to prevent vacuum loss by undesirable pathways.

(*Sub-Slab Depressurization System)

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