

An Investigation into the air quality of Native's Buildings

BTEX GASES- THE ONES TO WATCH OUT FOR!

BENZENE

Benzene is a carcinogen, and a high exposure can increase the risk of cancer and other illnesses. Benzene in indoor air can originate from outdoor air and also from sources indoors, such as building materials and furniture, heating and cooking systems, stored solvents and various human activities. Indoor concentrations can also be affected by climatic conditions and the air exchange rate due to forced or natural ventilation. Materials used in construction, remodelling and decorating are major contributors to indoor benzene concentrations. Certain furnishing materials and polymeric materials such as vinyl, PVC and rubber floorings, as well as nylon carpets and SBR-latex-backed carpets, may contain trace levels of benzene. Benzene is also present in particleboard furniture, plywood, fibreglass, flooring adhesives, paints, wood panelling, caulking and paint remover. New buildings or recently redecorated indoor environments have been associated with high concentrations of benzene from materials and furniture.

TOLUENE

Toluene is not as toxic as benzene but still a concern for indoor air quality. Toluene can be found in paint thinners, paintbrush cleaners, nail polish, glues, inks, stain removers, printers/photocopiers and computers.

ETHYL-BENZENE

Ethyl-benzene has a low acute toxicity, but the long term consequences of exposure are ambiguous. It can be found in carpet glues, varnishes and paints.

M/P-XYLENE

M / P Xylene is flammable but of modest acute toxicity. The main effect of inhaling xylene vapor is depression of the central nervous system and causes symptoms such as headaches, dizziness, nausea and vomiting. Consumer products with xylene emissions include pens/inks and coatings. Xylenes are also emitted from building materials such as carpet adhesives, vinyl adhesive, latex caulk and paint, and various mouldings.

O-XYLENE

O-Xylene is not acutely toxic but can cause narcotic effects.

HIGH

TOXICITY

LOW

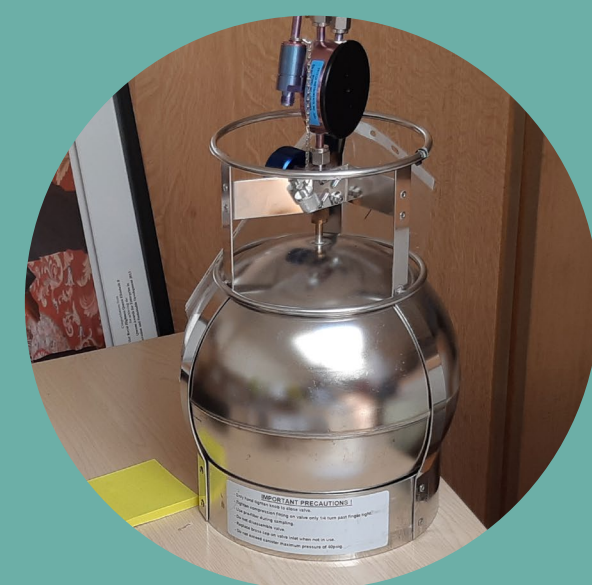
How was it carried out?

Native Architects collaborated with the Department of Environment and Geography at the University of York.

Air was evacuated from 6 litre Entech canisters using a pumping system to an internal pressure of approximately 0.005 PSI. The canisters were transported to the sites where a sampling inlet valve was attached to restrict the rate of air intake to allow sampling to commence over the course of 24 hours. Each building was sampled once.

Rooms within these buildings were then systematically sampled. Living areas in residential properties were investigated to maintain consistency and to best represent the effect of building materials on the air quality. For the same reasons, office spaces formed the sampling areas in commercial buildings.

The results were published in a report entitled *The Effect of Green Building Materials on Indoor Air Quality in Residential and Commercial Buildings in North Yorkshire, UK* by Oliver Anderson



COMMERCIAL PROJECT ANALYSIS

KEY:

BENCHMARK
Concentrations of compounds were observed in a previous study by Harrison et al. (2009) for residential and commercial properties. Sampling took place in the UK in a range of rural and urban locations and acts as a comparable study with regards to climate and building standards.

NATIVE PROJECTS:

LISTED SHOP
Natural materials refurb of Listed shop

NEW VISITOR ATTRACTION
Natural materials + steel

THE GRANARY
Natural materials barn refurb

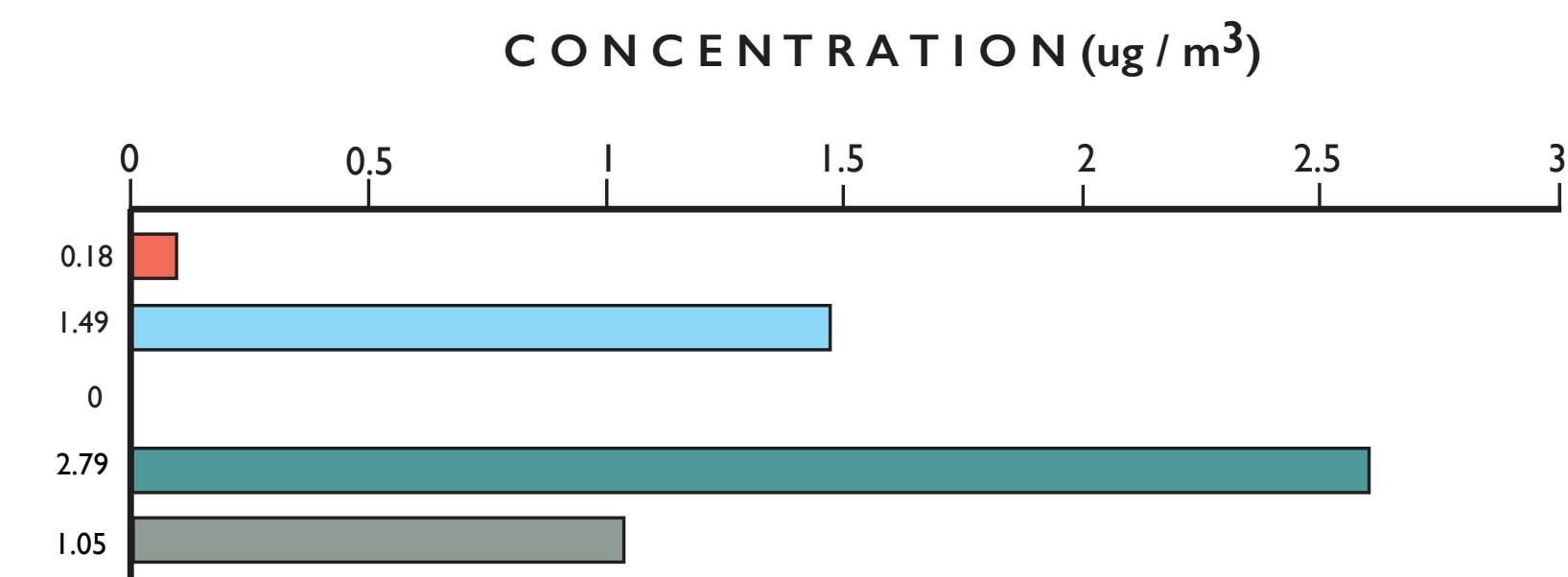
BARN CONVERSION
Hemp showroom/office

Here are a few off gassing culprits...



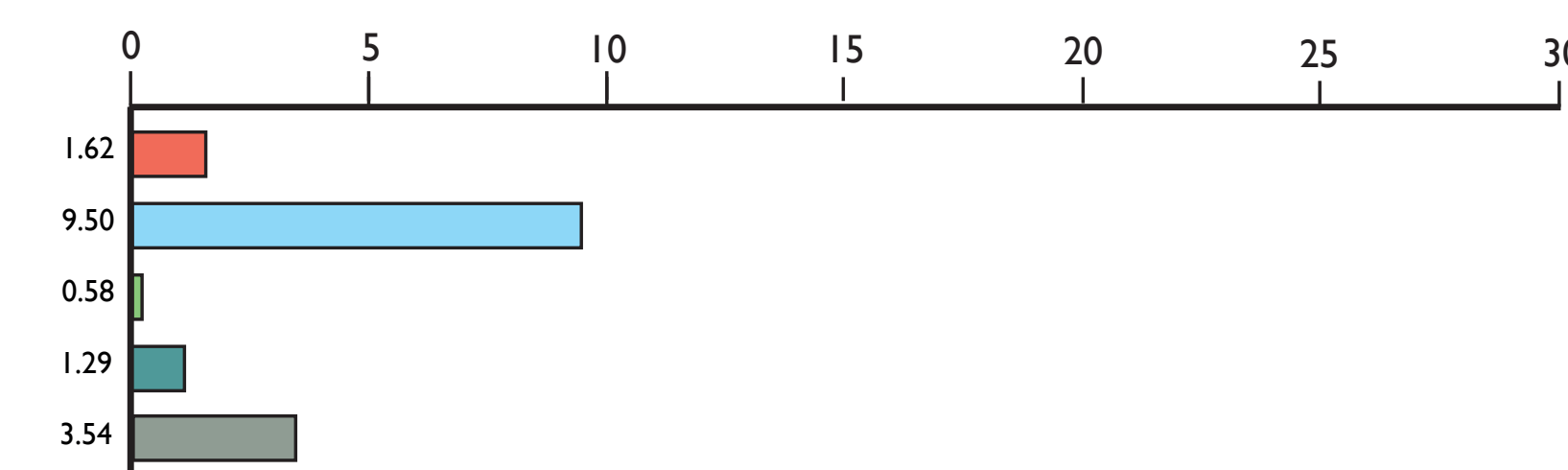
BENZENE

LISTED SHOP
NEW VISITOR ATTRACTION
THE GRANARY
BARN CONVERSION
BENCHMARK



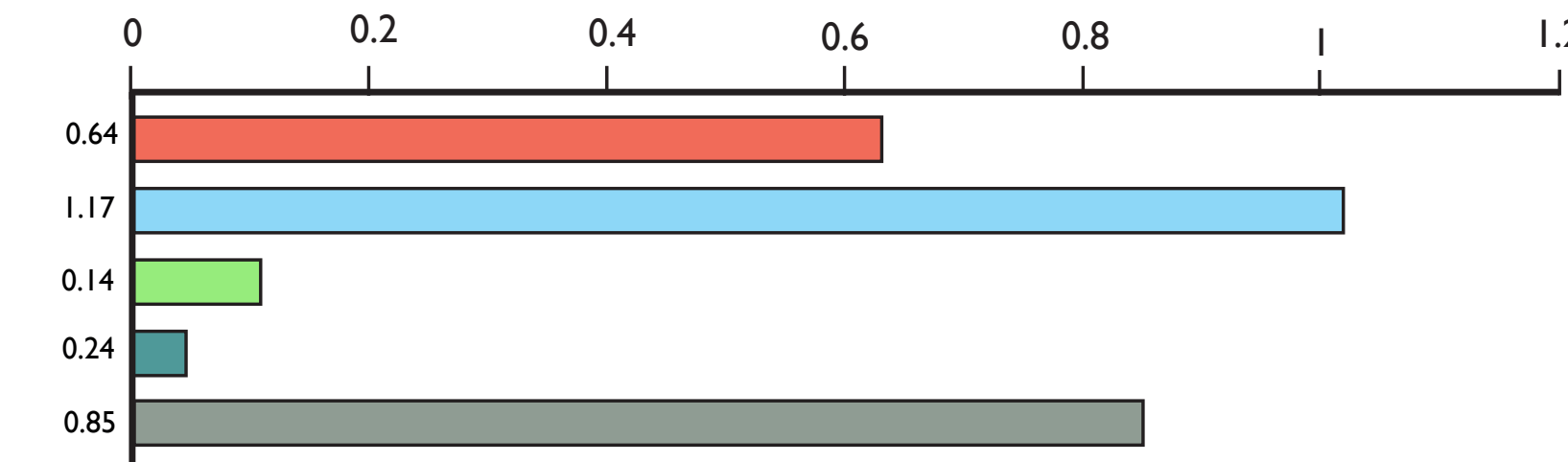
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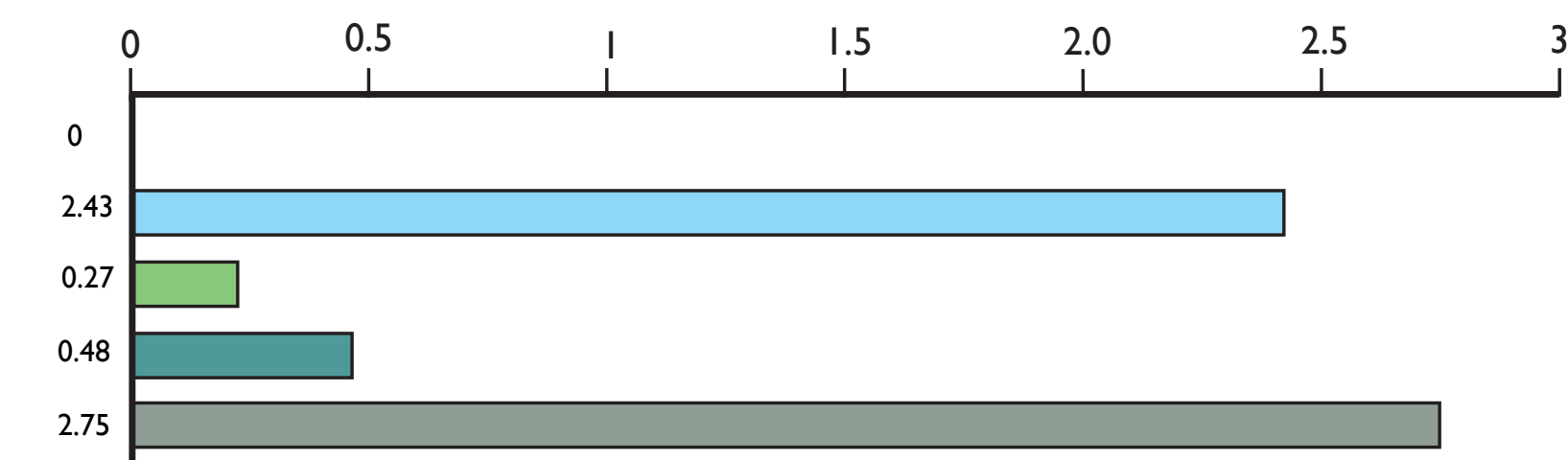
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