

Saline dusts and potential for damage

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INTRODUCTION

Tower Curing Works in Great Yarmouth is being adapted to house museum displays. There are concerns that saline dusts associated with the original fish salting may cause conservation problems.

A survey collected samples with four aims:

1. Analyse dust samples in the curing works for chloride content
2. Analyse brick and wood cores from the wall for chloride
3. Measure the flux of dust to surfaces (1)
4. Classification of dust and identification of source of dust
5. Suggestion on conservation relevance of the dust



Built in 1890
Old Tower of Curing Works



Salt store Box



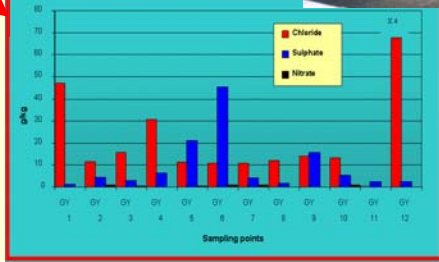
Fish Washing Box



Salt materials onto wooden ceiling fl



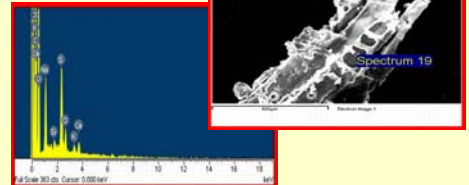
Dust samples collected from several surfaces



DUST -

Coarse dust contained both sulfates and chlorides. The salts appear to damage the walls and plaster (gypsum) contributes sulfates.

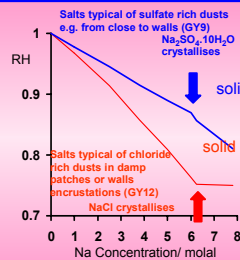
Image from SEM of cementation of salt to wood



SALINE DUST -

Samples collected were in some cases 50% salt although in general this accumulated a modest rate. In damp areas these were often rich in chloride and low in sulfates.

Thermodynamic modelling show chloride rich systems are hygroscopic at lower RH



Settled salt particles and brick dust

POTENTIAL CONSERVATION ISSUES

Changes in water content of these dust with humidity often 10 times greater than typical building dusts

Although the dusts can readily be cleared away analysis showed that large amounts of soluble chloride and sulfate was present within the brick work and wooden beams and has the potential to be mobilised, perhaps continuing the wall damage currently observed (2).

Salt particles from building fabric tend to be large and are likely to settle on furnishings and objects on display (3). These salts are hygroscopic, thus enhancing the potential for corrosion.

LOOKING FORWARD

Salt particles are clearly undesirable in museum environments. The renovation work and new coatings may limit the deposition of saline particles from the old fabric. However these are likely to be big and settle rapidly. It will be important to determine their flux to surfaces within the new building.

REFERENCES

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