Report of Results: MVA9214

Examination of a SQUARE D Electrical Box Exhibit C (Beach Case)

Prepared for:

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Exhibit C (Robert Beach Case)

Introduction

This report presents the results of an examination of a SQUARE D Class 6536 electrical control unit that was delivered to MVA Scientific Consultants from Sue McGregor of Lipsitz & Ponterio on 04 April 2012. The sample was assigned the MVA sample number X0478. MVA Scientific Consultants was asked to analyze the unit for asbestos content. Components of the unit were analyzed separately and assigned sample number modifiers as listed in Table 1. The analyses were done in our laboratory during the period of 09 April to 27 April 2012.

Methods

Each component was initially examined under an Olympus SZ-40 stereomicroscope at magnifications from 7X to 40X. A rasp was used to collect representative portions of the particulate from each component and these were mounted in Cargille refractive index liquids for analysis by polarized light microscopy (PLM) using an Olympus BH-2 polarized light microscope with a magnification range from 100X to 1,000X. The PLM analysis followed the analytical procedures recommended by the U.S. Environmental Protection Agency [1]. The PLM results for asbestos are given in terms of percent by volume.

A portion of the sample was also analyzed by Fourier transform infrared microspectrophotometry (micro-FTIR) utilizing a SensIR IlluminatIR infrared microspectrometer coupled to an Olympus BX51 microscope.

In order to determine whether or not asbestos fibers were readily releasable from the unit surface, a finger was applied to the surface of subsample X0478A and the particles transferred to an SEM stub for analysis by scanning electron microscopy (SEM). The SEM analysis was done using a JEOL JSM-6490LV coupled with a Thermo Scientific Noran System SIX x-ray energy dispersive spectrometer (EDS).

Results

Sample X0478 (SQUARE D Class 6536 electrical control unit labeled 'Exhibit C') contained three suspect pieces that were designated as X0478A, X0478B and X0478C (Figures 1 and 2). The results of the PLM analyses are summarized in Table 1.

Subsample X0478A contained 15-25% chrysotile asbestos by PLM (Figure 3). Asbestos fibers were protruding from the surface (Figure 4). According to the FTIR analysis, the resin binder in X0478A is consistent with a polyethylene (Figure 5). Asbestos fibers were released from the X0478A material and transferred onto a finger (Figure 6).

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Subsamples X0478A and X0478B appeared to be the same material. X0478B was not analyzed.

X0478C contained 10-20% chrysotile asbestos by PLM (Figure 7). Asbestos fibers were protruding from the surface (Figure 8).

References

1. U. S. Environmental Protection Agency, "Test Method EPA/600/R-93/116 -- Method for the Determination of Asbestos in Bulk Building Materials."

Table 1. Sample Information and Asbestos Analysis Results

Sample ID	Description	PLM Analysis Results % Chrysotile
MVA X0478A	'Exhibit C' SQUARE D Class 6536 Unit Tan Molded Resin Piece with Dark Gray "Rind"	15-25%
MVA X0478B	'Exhibit C' SQUARE D Class 6536 Unit Tan Molded Resin Piece with Dark Gray "Rind"	NA*
MVA X0478C	'Exhibit C' SQUARE D Class 6536 Unit Dark Gray Molded Resin Piece	10-20%

Subsamples X0478A and X0478B appeared to be identical material.
X0478B was not analyzed.

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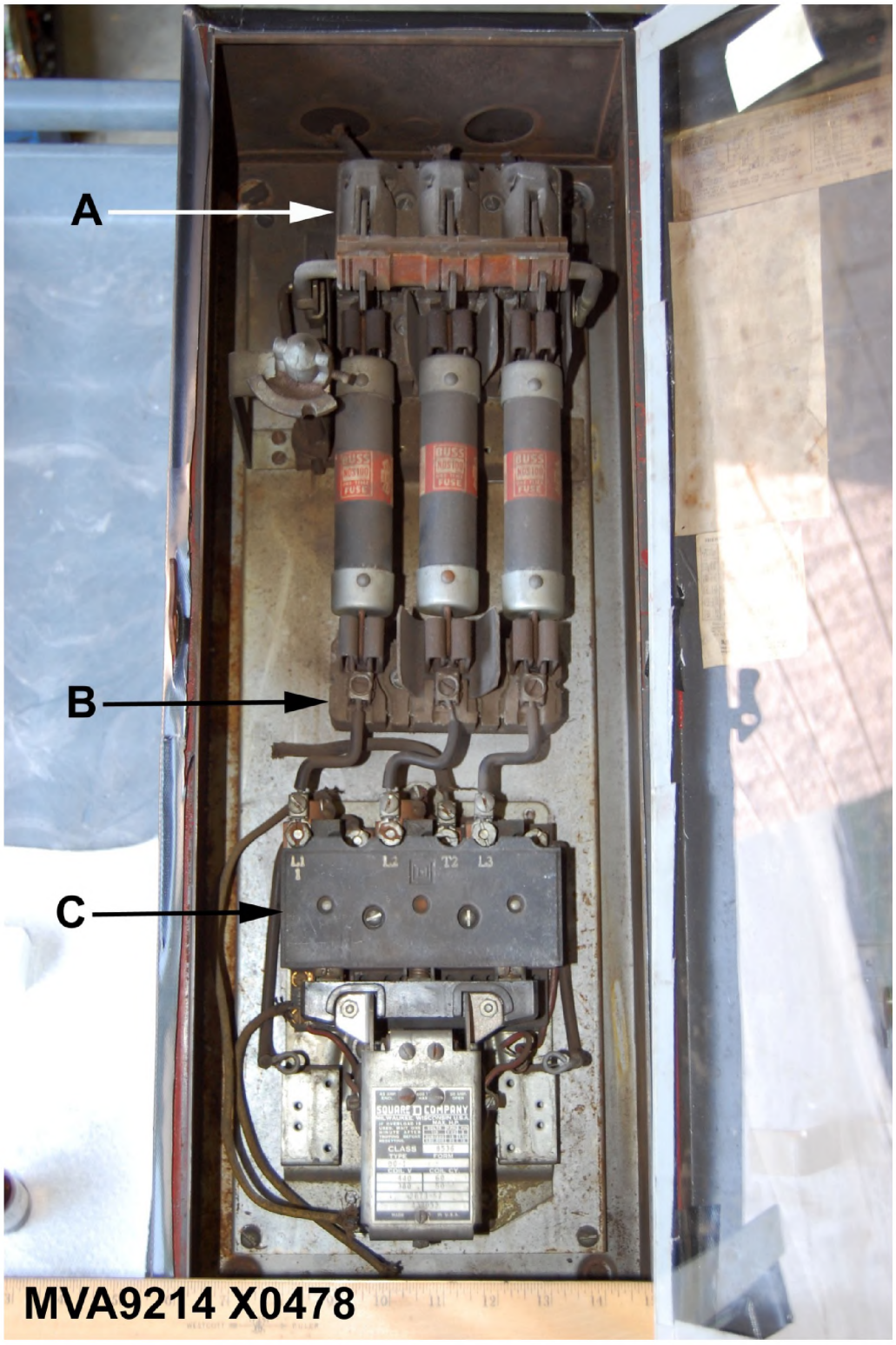


Figure 1. Sample X0478 (SQUARE D electrical control unit) showing materials suspected of containing asbestos after the initial examination.



Figure 2. Plate on Sample X0478 (SQUARE D electrical control unit).

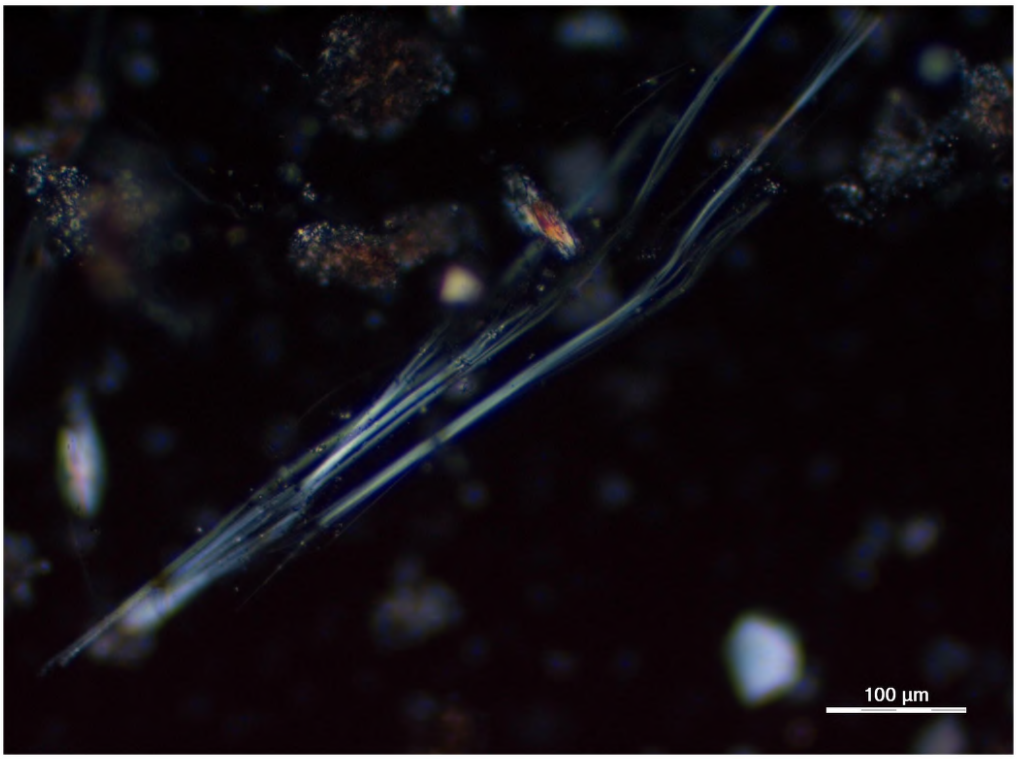


Figure 3. PLM image of chrysotile from X0478A.



Figure 4. Asbestos fibers are protruding from the surface of Sample X0478A.

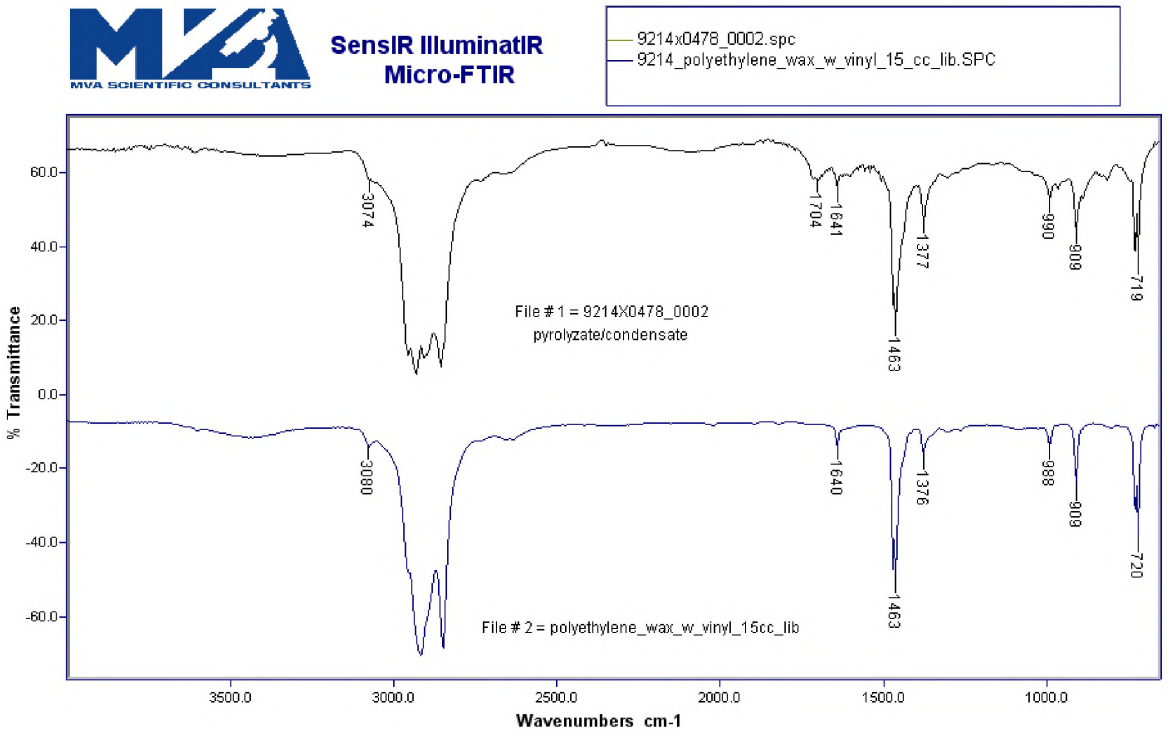


Figure 5. Comparison of the FTIR spectrum from X0478A and a reference spectrum from polyethylene.

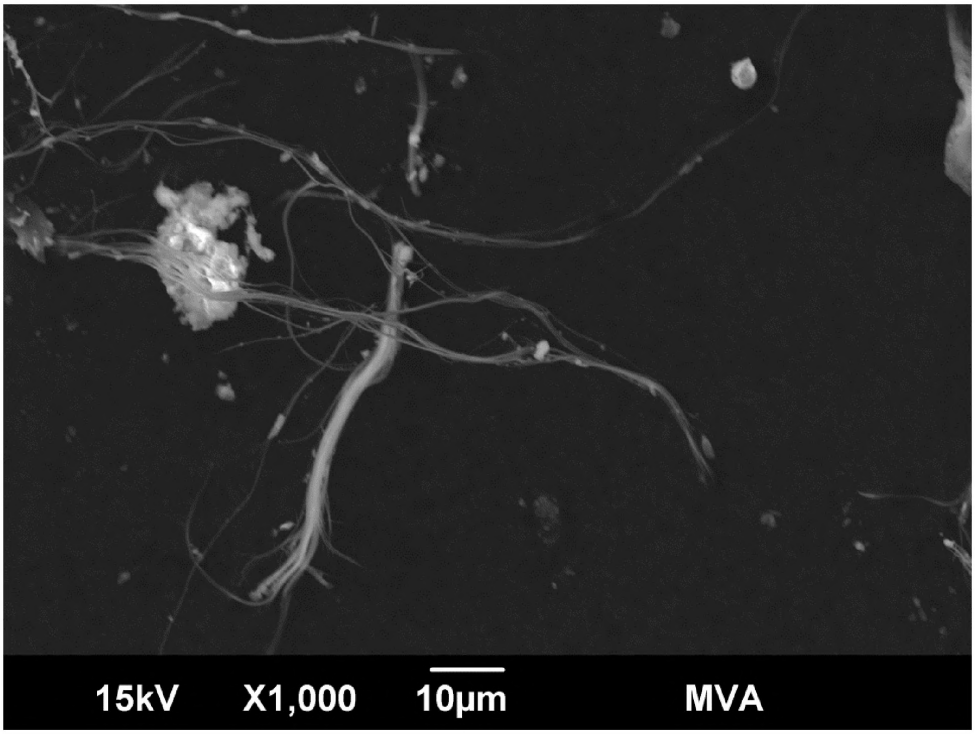


Figure 6. SEM image of chrysotile asbestos removed with a finger from the surface of the Sample X0478A.

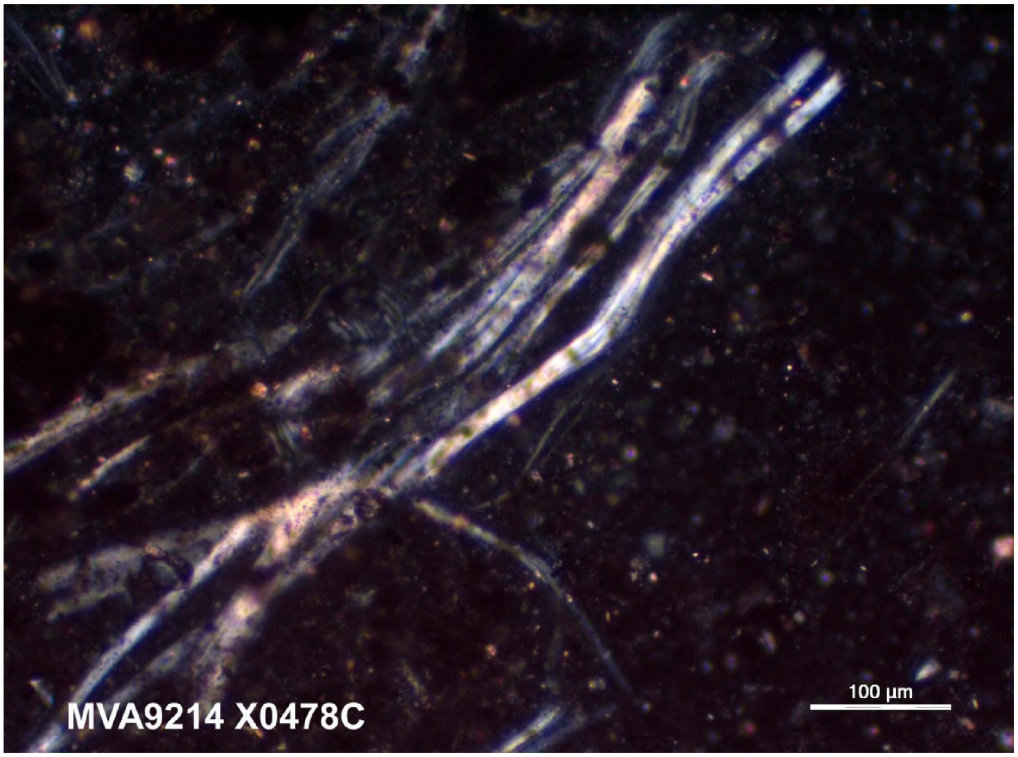


Figure 7. PLM image of chrysotile from X0478C.

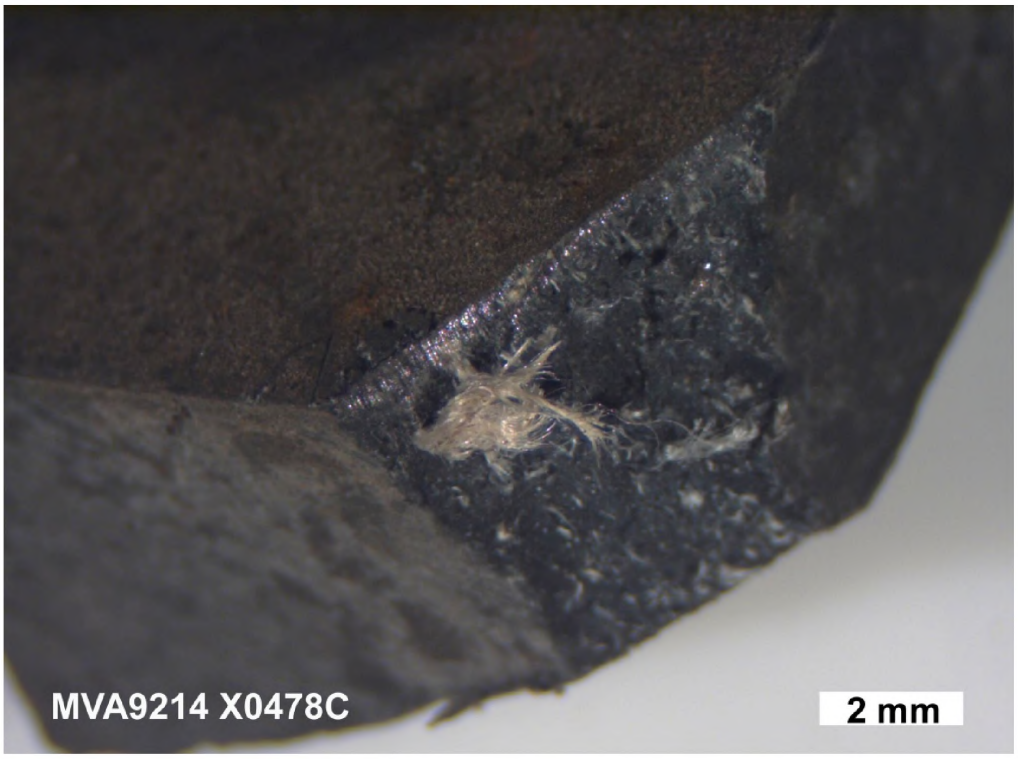


Figure 8. Asbestos fibers are protruding from the surface of Sample X0478C.