

Frontier Analysis, Ltd

TECHNICAL SERVICE RESPONSE NO.: UT024

Subject: Identification of Material found in a Wheat Crop Formation (Teton, Idaho, August 10, 2002)

Date: October 23, 2002

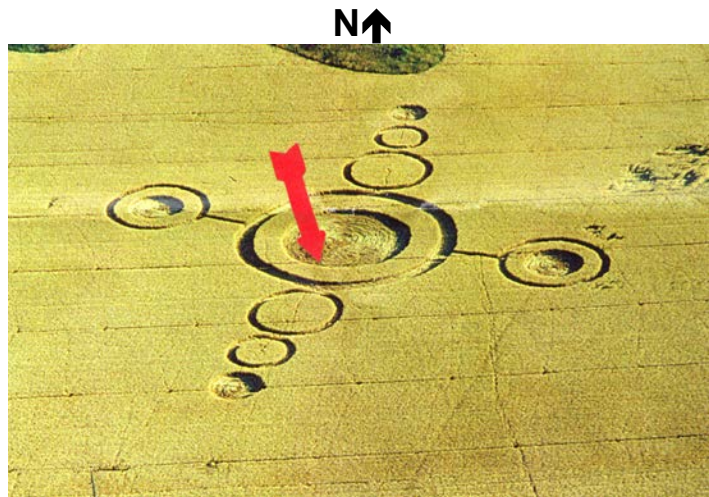
Requested By: Nancy Talbott
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Analytical Scientist

Analyzed By: P. A. Budinger
Frontier Analysis

Nick Reiter
The Avalon Foundation

Background/Objective: The following crop formation appeared in a farmer's wheat field in Teton, Idaho on August 10, 2002.



BLT Research

A yellow material was found on the hand of the farmer's son after reaching into the formation on August 15, 2002. The arrow on the photograph designates the location of the material. The goal is to identify this substance.

Conclusions:

The substance is a man-made terpolymer composed of styrene, acrylonitrile, and butadiene monomeric units. It is commonly referred to as an "ABS" polymer. According to the chemical dictionary¹ ABS resin is "Any of a group of tough, rigid thermoplastics deriving their name from the three letters of the monomers which produce them; Acrylonitrile-Butadiene-Styrene. It has numerous uses such as: "engineering plastics used for automobile body parts and fittings; telephones; bottles; heels; luggage; packaging; refrigerator door liners; plastic pipe; building panels; shower stalls; boats; radiator grills; machinery housings; business machines. Several trademark types are "Cycolac," "Abson," "Kralastic," "Lustran." There are others.

Procedure:

Sample: Yellow particulates from a wheat crop formation "Circle B" in Teton, Idaho. The sample was received wrapped in paper which was inserted in a plastic bag.

Frontier Analysis (Phyllis Budinger) acquired infrared spectra of the material on the Nicolet Avatar 360 spectrometer using the Harrick SplitPea™ sampling accessory. Stereomicroscope photographs were obtained using the Leika GZ6 microscope interfaces to a Kodak Digital Science MDS 120 camera. The Avalon Foundation (Nick Reiter) acquired a SEM microphotograph and EDS elemental data from the material. Nick Reiter also examined the material under a UV light, by a Geiger counter, and for water solubility. Nick's report can be found in the addendum.

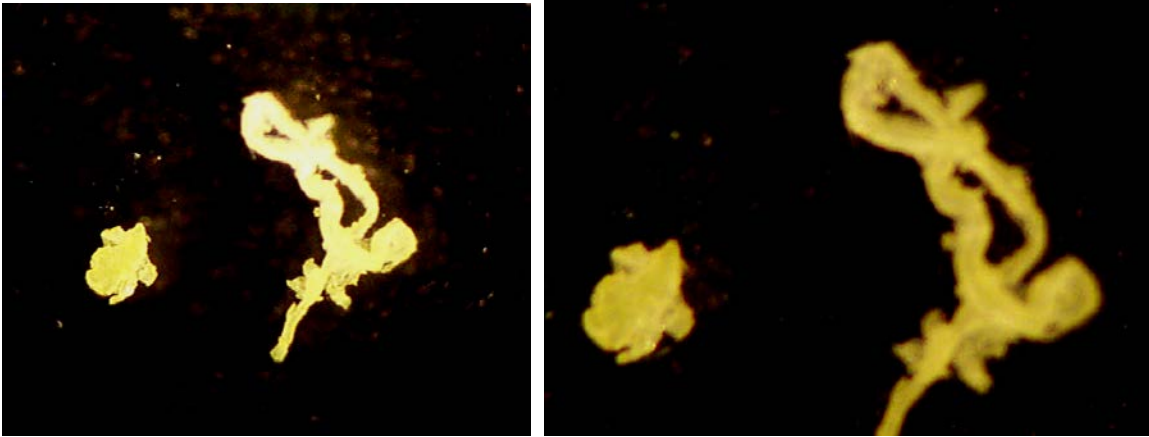
Results:

The results of the individual tests performed on the samples follow. These results are summarized in the conclusions section of this report.

Microscopy:

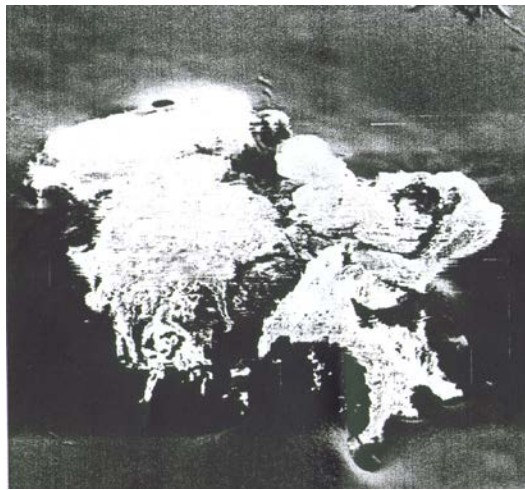
A stereomicroscope colored photograph of the material follows. The magnification is approximately 60X. The substance appears to be a composite of yellow flaky material when viewing through the eyepiece. However, the flakiness is not as obvious in these photographs.

¹ Gessner G. Hawley, "The Condensed Chemical Dictionary," 10th Edition, Van Nostrand Reinhold company, New York.



Frontier Analysis

A “low magnification” scanning electron microscope black and white photograph follows. It is more resolved and of a higher magnification than the photographs above. The material flake appears amorphous.

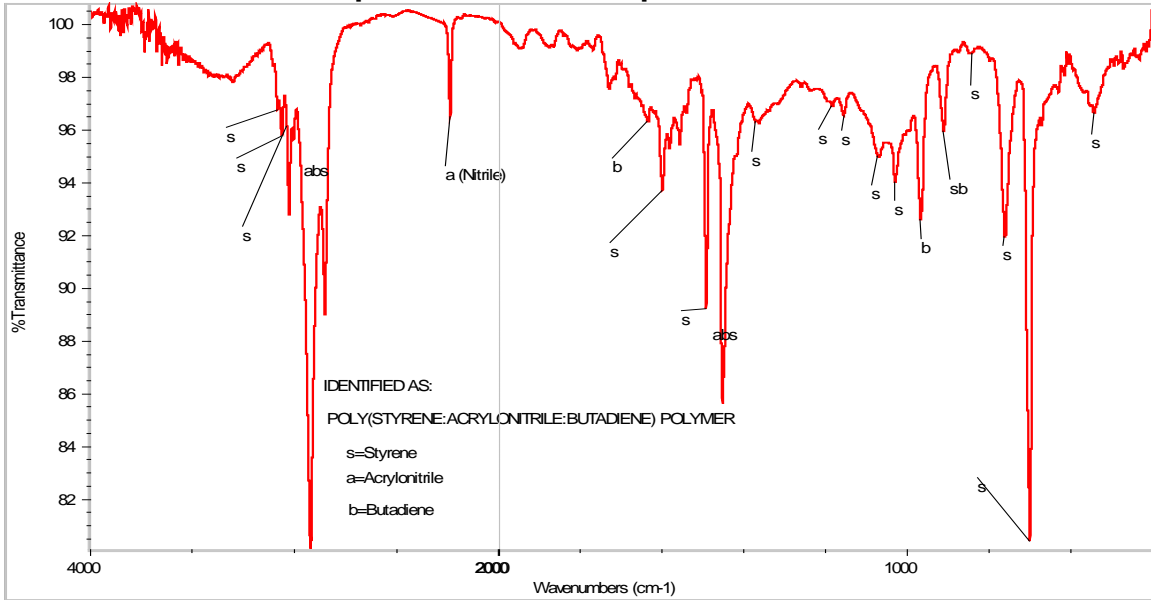


The Avalon Foundation

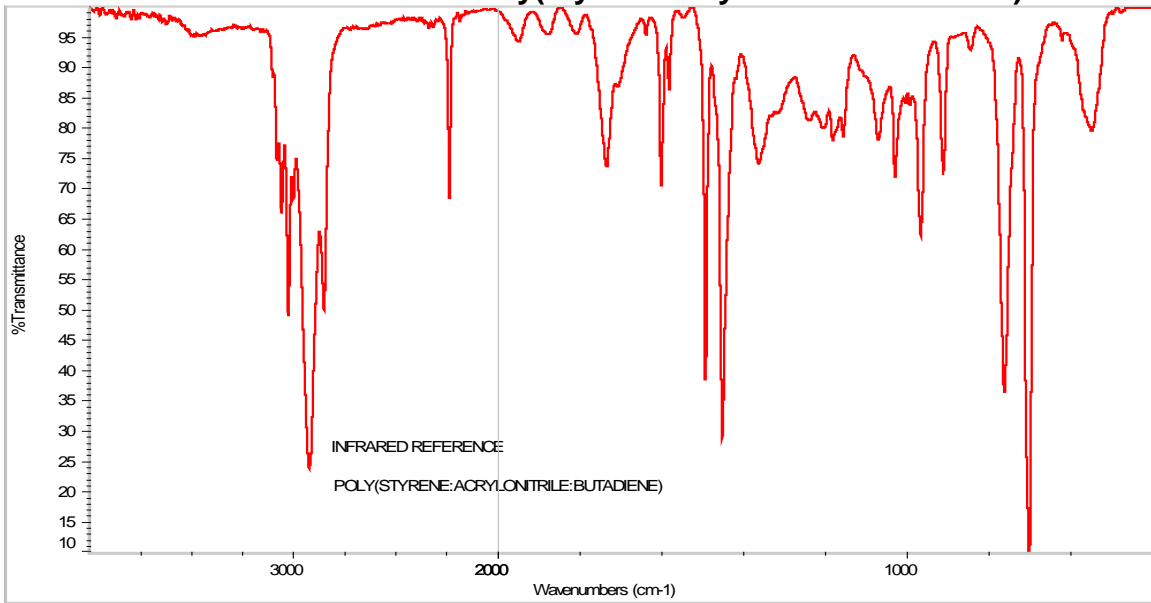
Infrared Analysis:

Infrared analysis identifies the crop formation material as a terpolymer of acrylonitrile, butadiene and styrene (an ABS resin). The spectrum matches a reference of this material. Following are spectra of the formation material with peak identifications and a reference of ABS polymer for comparison.

Infrared Spectrum of the Crop Formation Material

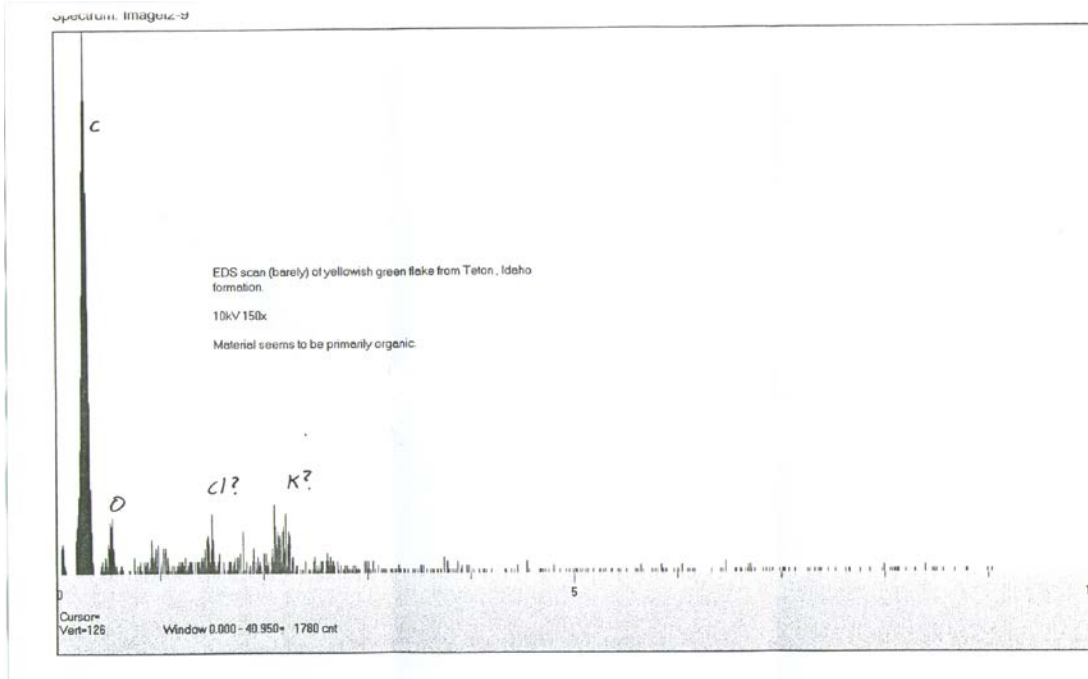


Infrared Reference of Poly(styrene:acrylonitrile:butadiene)



EDS:

EDS elemental analysis supports the infrared data by showing a prevalence of carbon which is the predominant element in an ABS polymer. A minor amount of nitrogen is present in the polymer. However, the nitrogen peak is very close to that of carbon and is therefore masked in the spectrum. Other weak peaks suggest very small amounts of other elements which are perhaps from polymer additives or contamination. The EDS spectrum follows.



Other Tests:

The other tests performed by Nick Reiter also support the infrared ABS polymer identification. No fluorescence was observed under a UV light which would be expected for this polymer. The Geiger counter showed no radioactivity. Additionally, the polymer was not soluble in water.

Phyllis A. Budinger

APPENDIX

Notes on Yellowish Flake Material from Teton, Idaho Formation

3 October, 2002

N. A. Reiter

A single granule of the received material was examined by EDS. A low magnification SEM photo and EDS scan are attached.

No microstructure was evident. The material flake appears amorphous.

The material was very difficult to get an X-ray signature from. The EDS scan is thus very poor. However, it seems to be an organic compound, with no substantial metallic or heavier element components. Carbon overwhelmingly predominates.

The material was tested with both long and short wave UV light. It does not appear to fluoresce in any visible mode.

The material was tested with our Geiger counter. It is not noticeably radioactive.

The single flake examined by EDS was immersed in a water droplet. It did not dissolve. Thus we might say that the material is not readily water soluble.