

## Regulated Research Institutional/Industrial Setting Form (1C)

This form must be completed AFTER experimentation by the adult supervising the student research conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

Student's Name(s) Madeline Competello

Title of Project The Use of 51 TITAN Model 600/800 GeoExploration Check Sample X-Ray Gun in Analysing Pb, Cr, Zn, As, Cu and Cd concentrations in Long Island elementary schools and ~~Public~~ Public Parks Soil

**To be completed by the Supervising Adult in the Setting (NOT the Student(s)) after experimentation:**

(Responses must be on the form as it is required to be displayed at student's project booth; please do not print double-sided.)


The student(s) conducted research at my work site:

1. Did you or your proxy (e.g. graduate student, postdoc, employee) mentor or provide substantial guidance to the student researcher? ☒ Yes ☐ No
- a. If no, describe your and/or your institution's role with the student researcher and his/her project (e.g. supervised use of equipment on site without ongoing mentorship and sign below).

b. If yes, complete questions 2–5.

2. Is the student's research project a subset of your ongoing research or work? ☐ Yes ☒ No
- Use questions 3, 4 and 5 to detail how the student's project was similar and/or different from ongoing research or work at your site.

3. Describe the independence and creativity with which the student:
- a. developed the hypotheses or engineering goals for the research project

Student independently devised the hypotheses behind concentrations of metals in soil on Long Island based upon location. Mentor at New York Institute of Technology trained the student on, and provided access to, a number of different analytical instruments, including an X-ray fluorescence unit and a spectrophotometer. Once trained and comfortable with the equipment, student conducted lab work on her own 

b. designed the methodology for his/her research project

Student developed the plan for number of samples required per location (typically a park) and was able to incorporate some water analyses into the project as well. Her methodology ensured that samples were geo-referenced so they could be mapped in ArcGIS.

c. analyzed and interpreted data

Student used X-ray fluorescence and spectrophotometry to analyze environmental samples in different media (soil and water). Metals analysis in soil was recorded as parts per million and water analysis was recorded as light absorbance across a 200-800 nanometer spectrum. She was able to infer how larger concentrations of metals appeared in the soils in more industrialized locales.

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**Continued**

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4. Detail the student's role in conducting the research (e.g. data collection, specific procedures performed). Differentiate what the student observed and what the student actually did.

The student's role was that as a principal investigator. She determined the research questions, developed the methodology, ran the analytics, recorded the data, and drew conclusions from the dataset.

Student observed how the distribution of metals in soil vary dependently upon location using x-ray technology as well as water quality by observing the changes in absorbance spectra using spectrophotometry.

Finally, student was able to map the concentrations through GIS software which could be considered a novel dataset for public use.

5. Did the student(s) work on the project as part of a group?  
If yes, how many individuals were in the group and who were they (e.g. high school students, graduate students, faculty, professional researchers)?

☐ Yes ☒ No

Student worked independently.

I attest that the student has conducted the work as indicated above and that any required review and approval by institutional regulatory board (IRB/IACUC/IBC) has been obtained. Copies are attached if applicable.  
I further acknowledge that the student will be presenting this work publicly in competition and I have communicated with the student research regarding any requirements for my review and/or restrictions of what is publicized.

David Nadler

Supervising Adult's Printed Name

  
Signature

Chairperson

Title

New York Institute of Technology

Institution

Old Westbury, NY 11568

Address

11/06/19

Date Signed (must be after experimentation) (mm/dd/yy)

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