

**GREATER SAN DIEGO SCIENCE & ENGINEERING FAIR (GSDSEF)  
PROJECT PROPOSAL/SIGNATURE\* FORM (GSDSEF-1, 2015)**

**This form must be completed and signed prior to starting project work. It must be placed in the student's notebook with an ABSTRACT OF THE PROJECT for the GSDSEF Screening Fair. (Use the "Tab" key to move from line to line)**

**1. Project Title** Light : A Form of Pollution?

Is this a continuation of a previous project? ☐ Yes ☒ No

**2. STUDENT'S NAME (Last, First, Middle)** Gupta, Mihir

**2a. Partner's Name (for Senior Division 2 person projects only)** N/A

**EACH SENIOR DIVISION PARTNER MUST SUBMIT A SEPARATE PROJECT PROPOSAL FORM.**

**3. Address, City, Zip** 11147 Caminito Arcada, San Diego, California, 92131

**4. Phone** 858-689-8836 **email** m08.in.us@gmail.com

**5. School** Marshall Middle School **Grade** 8

**6. Teacher** Elaine Gillum

**7. This project involves (check all that apply):**

- ☐ **Live Vertebrate Animals** (GSDSEF-2, 2015)
- ☒ **Humans as subjects, helpers, or interviewees** (GSDSEF-3, 2015)
- ☐ **Hazardous Substances (anything that could cause injury)** (GSDSEF-4, 2015)
  - ☐ **Chemicals**
  - ☐ **Infectious Agents**
  - ☐ **Bacteria, Fungi and/or Molds**
  - ☐ **Mutagenic Agents**
  - ☐ **Carcinogenic Agents**
  - ☐ **Teratogenic Agents**
- ☐ **Human or Other Vertebrate Tissue** (GSDSEF-5, 2015)

**8. WHERE REQUIRED (see #7 above), the following supplemental forms must be completed and included with the project proposal form (CHECK ALL THAT APPLY):**

- ☐ *Certification of Humane Treatment of Live Vertebrate Animals* (GSDSEF-2, 2015)
- ☒ *Certification of Compliance of Research Involving Humans* (GSDSEF-3, 2015)
- ☐ *Certification of Hazards Control* (GSDSEF-4, 2015)
- ☐ *Certification of Vertebrate Tissue Source & Safety* (GSDSEF-5, 2015)

**9. Location where experimental procedures will take place:** 26 locations which included :

25 in Southern California, and 1 in Mumbai, India

**10. People, companies, etc. providing equipment, materials, workspace:** Dan McKenna, site manager at Palomar Observatory (CalTech); Anil Gupta, father of experimenter

**11. Describe, in 200 – 250 words, the planned project/experiment and the procedures to be used:**

The experiment is regarding light pollution, and its effect on the night sky. Light pollution levels in different areas of Southern California and in India will be measured, and compared to one another. If the sky is brighter in Mumbai than it is in Southern California, a correlation between the population of an area and its light pollution levels may exist. The program used to analyze the photographs will be a photometry program, MaxIm DL Pro V6. The camera used will be a Nikon D7000 with a Nikon 18-200mm f/3.5-5.6G AF-S ED VR II Nikkor Telephoto Zoom Lens. It will take RAW images, and those will be analyzed by the photometry software. The RAW images will be processed on a MacBook Pro running OS X 10.9 (will be updated to OS X 10.10), and a HP Envy laptop running Windows 8. A remote will also be used for the camera, as the experimenter should not intrude upon the picture. The optimal conditions to take images would be a dark, cloudless night, when the moon is either on the horizon or when not visible to the experimenter. In the photometry software, the first step is to load the picture. The second step is to adjust the zoom to 12.5%. The third step is to extract bayer plane 2. The fourth step is to run aperture photometry, found in the analyze drop down menu. The final step is to record sky brightness in Microsoft Excel.

Just before the screening call, attach a 200-250 word abstract of your project to this form.

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GREATER SAN DIEGO SCIENCE & ENGINEERING FAIR  
(GSDSEF) PROJECT PROPOSAL/SIGNATURE FORM (GSDSEF-1, 2015)  
REQUIRED SIGNATURES:

**Student:**

I have read the *Rules and Regulations* of the GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR and certify that my project complies with them. I understand that failure to meet the terms of these rules and regulations will result in the disqualification of my project.

**SENIOR DIVISION:** GSDSEF forms meet the requirements of California law; therefore, all Senior Division students agree that, should they be selected to compete at the 2015 *Intel International Science and Engineering Fair (Intel ISEF)*, when they sign all required *Intel ISEF* forms they will predate them to agree with the date on this form.

*Mihir Gupta*

9-1-14

Student Signature/Date

**Parent/Guardian:**

I am aware of all potential safety hazards connected with this project, approve the precautions being taken to ensure my student's safety and will, when appropriate, provide guidance and/or supervision. I understand that failure to comply with *Rules and Regulations* of the GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR will result in the disqualification of the project.

*Mehar Gupta*

9-1-14

Parent Signature/Date

**Teacher:**

I approved this project prior to the student beginning work on it and verified that it complies with the *Rules And Regulations* of the GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR. Any concerns about the project's design, appropriateness, safety, or legality were submitted to the GSDSEF Scientific Review Committee (SRC) for approval prior to allowing the student to proceed. I understand that failure to comply with the Fair's *Rules And Regulations* will result in the disqualification of the project. I will provide all needed supervision (other than that specified on other included forms) and will ensure that this proposal and all required supplemental forms are included in the student's notebook at the screening fair. I will have the student, if invited to apply for entrance to the GSDSEF, submit all SRC requested certification forms with their 2015 *Application for Entrance*.

*ESPR*

9-1-14

Teacher Signature/Date

**Additional Advisor (if required)**

When certification forms (GSDSEF 2, 3, 4 or 5, 2015) are signed by someone in addition to the science teacher, a signature here ensures that the procedures described on these forms will be followed.

*DC McB*

01/6/2015

Additional Advisor Signature/Date