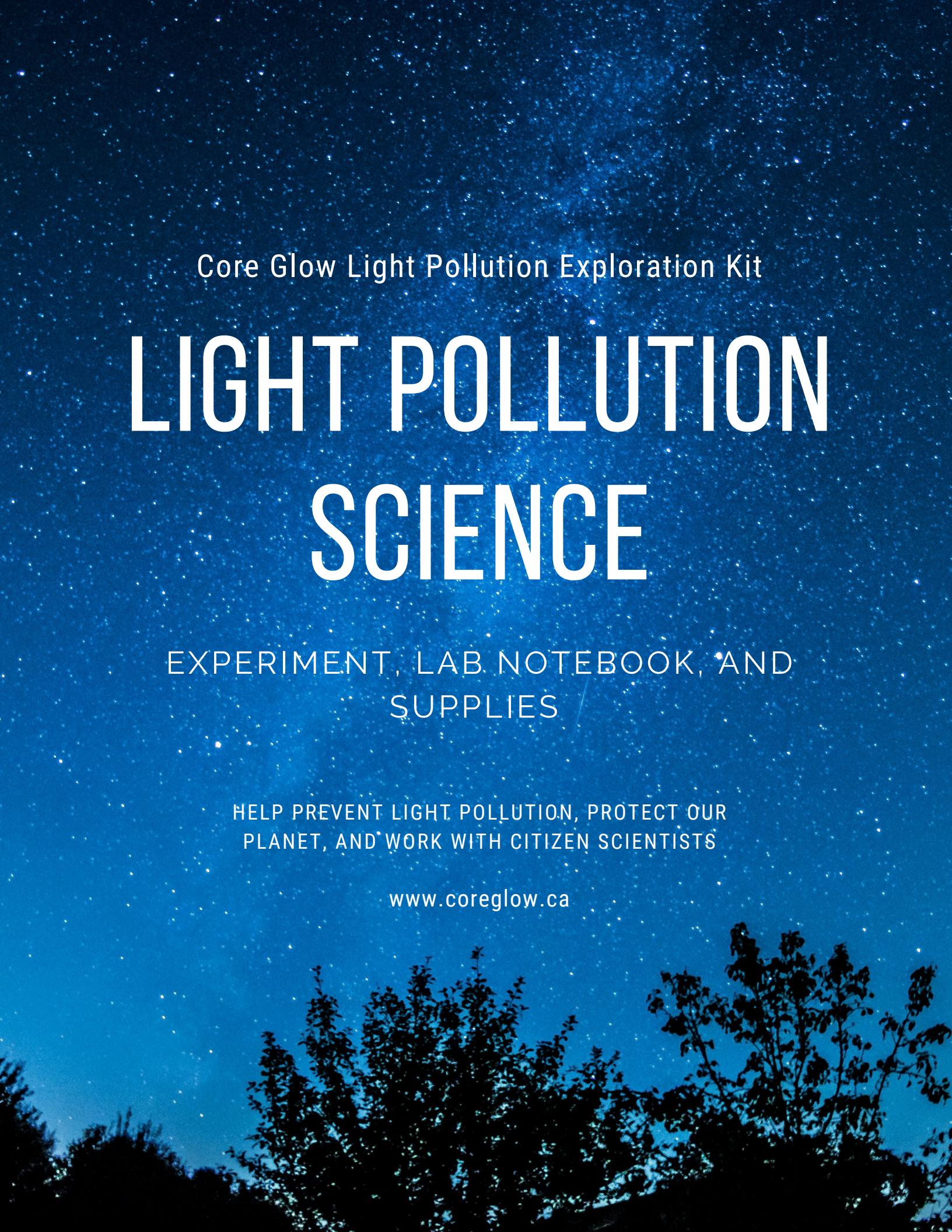
Core Glow Light Pollution Exploration Kit

LIGHT POLLUTION SCIENCE

EXPERIMENT, LAB NOTEBOOK, AND SUPPLIES

HELP PREVENT LIGHT POLLUTION, PROTECT OUR PLANET, AND WORK WITH CITIZEN SCIENTISTS

www.coreglow.ca



LIGHT POLLUTION & ITS IMPACT

Light pollution is one of the most pervasive forms of pollution, and also one of the easiest to prevent. It's as simple as turning off the lights. Lights are on everywhere, using precious electricity, disturbing the circadian rhythms of macro and micro organisms, and blocking the view of our galactic neighbourhood.

1 DEFINITION

Light Pollution: the presence of anthropogenic (human-made) and artificial light in the night environment. It is exacerbated by excessive, misdirected or obtrusive use of light, but even carefully used light fundamentally alters natural conditions.

2 IMPACT

As a major side-effect of human development, Light Pollution compromises human, plant, and animal health and disrupts ecosystems. Perhaps the hallmark of a disconnected, overworked society, artificial lighting blocks the meditative darkness of the night sky and disrupt the natural fluctuations of winter/summer, day/night, sleep/awake, which has many downstream impacts.

3 EXAMPLE: CIRCADIAN RHYTHMS

Circadian rhythm is the 'internal clock', which runs the daily cycles of the human body, including when you wake up, when you feel hungry, and when you feel tired. Artificial lighting disrupts these internal clocks in humans and wildlife.

4 EXAMPLE: ASTRONOMY

Astronomers who study stars, galaxies, deep space, and all the mysteries of our universe are in the practice of collecting light - this is how telescopes work! The light-sensitive telescopes are made to detect the tiniest flickers of light from the early universe - light pollution here on Earth interferes with these delicate signals from the early universe.

5 EXAMPLE : BIOLUMINESCENCE

Artificial lighting around bioluminescent bays alters the circadian rhythms of the algae that make light at night! Bioluminescent ecosystems have been restored by controlling the amount of light pollution around the bay!

6 PREVENTION

We can all prevent light pollution. The first step is to simply turn off your lights at night, including outdoor lighting. Also, choose light shades that cast light downward to prevent unecessary light casting. Also, using reflective and/or glow lighting at night greatly reduces light pollution to negligible levels!

Core Glow is used around bioluminescent bays and astrophysical observatories to reduce light pollution!

LIGHT POLLUTION EXPERIMENT

HOW MUCH LIGHT POLLUTION DO YOU EXPERIENCE?

Light pollution is all around us, and it's something we can measure. Our mission as citizen-scientists is to make observations about the world around us. We use these observations to make a 'hypothesis', which is a 'testable explanation' we then use to develop a prediction we can test experimentally. Then, we'll compare our experimental data with other research, and see if it matches our hypothesis (or not!).

In this experiment, we will use Core Glow stones as a hand-held indicator of light pollution. After the Core Glow stone is charged, it will emit a gentle glow for 12+ hours. This glow is visible in areas with little light pollution, but will be overwhelmed by the brightness of artificial bright lights at night. This means that by observing whether you can see the glow when you're outside at night, you will know immediately if there is light pollution present. In this experiment we will be making a map of light pollution, testing your observation skills, and recording data you can share with other citizen scientists.

TOOLS & PARTS NEEDED FOR EXPERIMENT

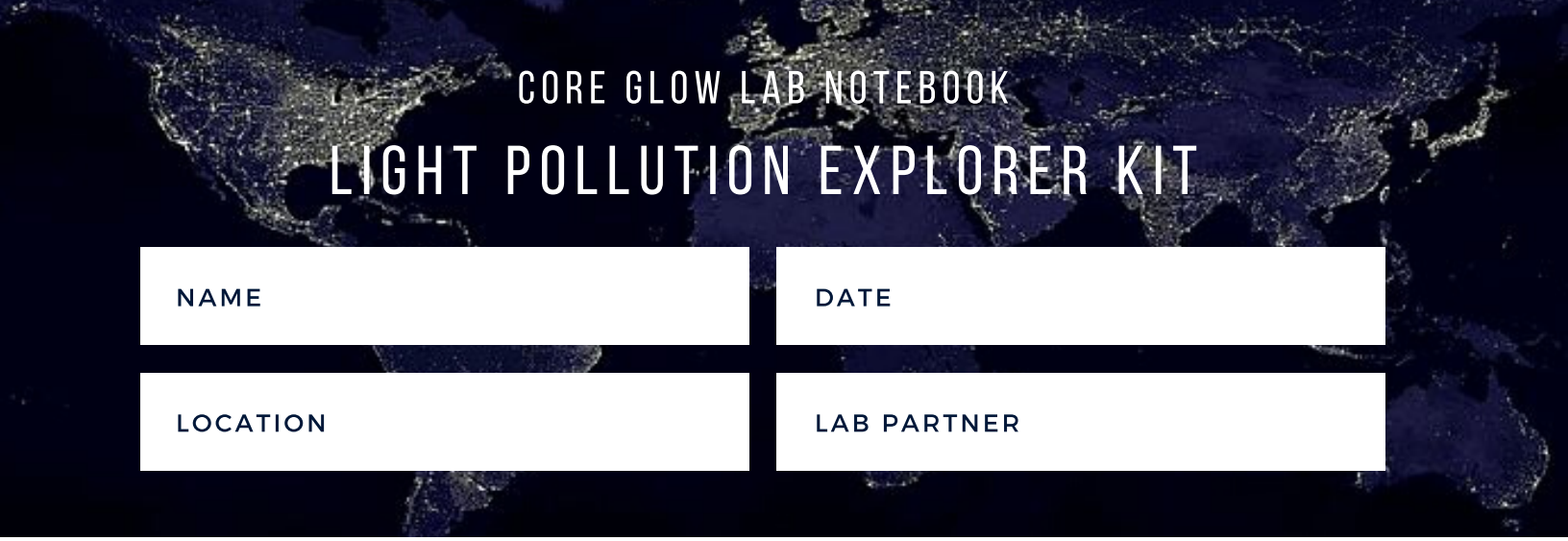
1. Core Glow Lab Notebook & pen to make observations
2. Core Glow Light Pollution Indicator Stones
3. Light to charge glow stones, a safe area to explore at night, and a lab-partner!

INSTRUCTIONS FOR EXPERIMENT

1. Precharge Core Glow stones during the day, or with a bright light before you go outside to explore.
2. Hold a glow stone in your hand, and focus on your ability to see the glow.
3. If you ***can*** see the glow, that means you are in an area with little-to-no extra lighting
4. If you ***can't*** see the glow, that means you are in an area that blocks your ability to see the gentle glow.

Continue to explore your neighbourhood and make a map of where you can see the glow, and where you can't. You just made a map of where there is light pollution, and where there isn't!

PRACTICE SAFETY AT NIGHT | BRING A TRUSTED FRIEND WHEN YOU ARE EXPLORING!



CORE GLOW LAB NOTEBOOK

LIGHT POLLUTION EXPLORER KIT

NAME

DATE

LOCATION

LAB PARTNER

OBSERVATION

Use this space for your first observations about your neighbourhood at night

QUESTION

What do you want to find out based on your observations?

HYPOTHESIS

What do you think the answer to your question will be?

EXPERIMENT

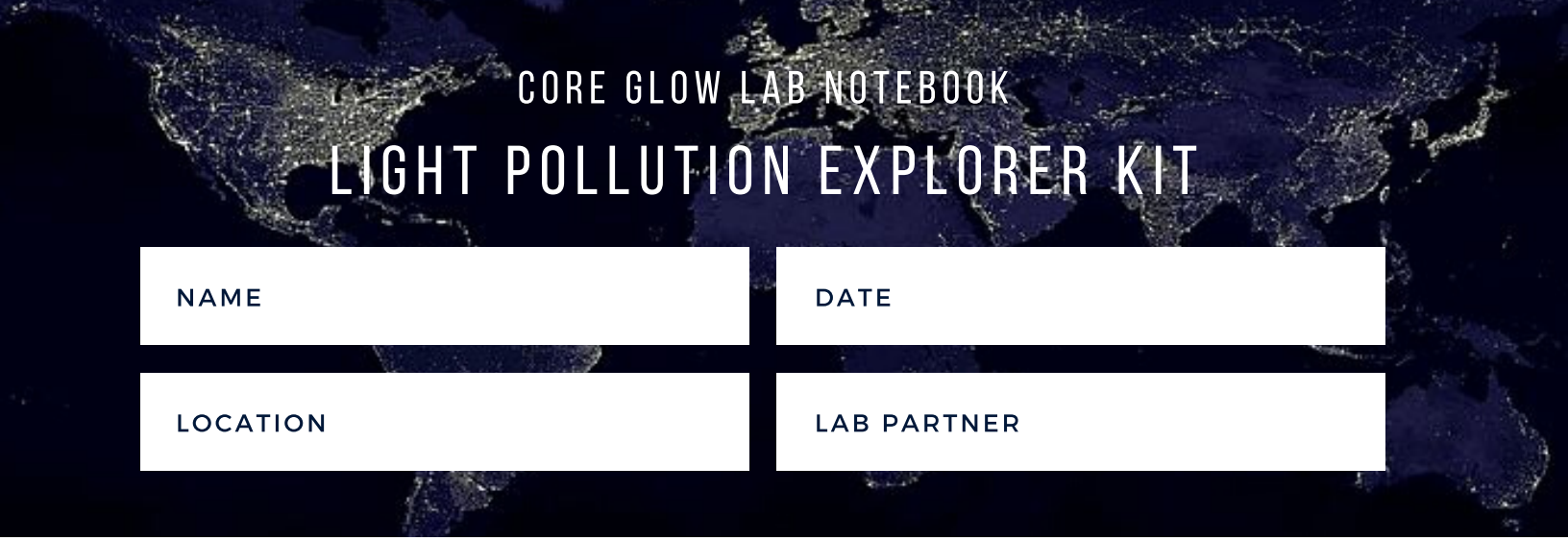
How will you find the answer to your question?

EXPERIMENT NOTES

As you draw your map, you may notice lots of things! Write them all down!

REFLECT

After collecting your data, what new information do you have to work with?



CORE GLOW LAB NOTEBOOK

LIGHT POLLUTION EXPLORER KIT

NAME	DATE
LOCATION	LAB PARTNER

MAP

Draw a map of the area you are observing. Make a V for every light you see on outside at night, and if possible, the direction it is casting light. Make an O for the areas you can see your Core Glow Indicator Zone glowing. Make an X for the areas you can't see your Core Glow Indicator Zone glowing.

TITLE	
YEAR/COURSE	AUTHOR

Compare your data!
Once you've worked on your own, it's always a good idea to check your observations with a few of your peers to see if you are gathering similar information. You can help each other, brainstorm why you may have had different findings, and come up with ideas for even better future experiments.

Notes on comparing Light Pollution map:

What now?
If you observed high levels of light pollution, there is a lot you can do about it! The best tool for change is knowledge; keep researching and spread the word. Use your data as proof that your ideas are worth listening to, and your enthusiasm will pass on to others.
Suggested Resources for Future Learning:
darksky.org, cost-lonne.eu, globeatnight.org

Further Exploration:
If you loved exploring, learning about light pollution, and helping everyone through collecting data and sharing your discoveries, consider taking part in the Globe at Night citizen science sky mapping extravaganza! With nothing but an app, a phone, and thousands of fellow scientists, you can help collect data about light pollution
Website: globeatnight.org