

# GREEN CHEMISTRY WITH DR BASUDEB SAHA

## TALKING POINTS

### KNOWLEDGE

1. What is a biopolymer? Name two common examples

### COMPREHENSION

2. How did manufacturers of petroleum-based lubricants ensure that their products had the right friction-reducing properties?
3. In a short paragraph, summarise the reasons why products made from biomaterials are better for the environment than petroleum-based alternatives.
4. Can you explain the key characteristics of the molecules needed to make lubricants work effectively?

### APPLICATION

5. The owner of a large manufacturing company is reluctant to move away from petroleum-based lubricants. What three arguments would you use to change their mind?

### ANALYSIS

6. Before RiKarbon, what were the difficulties involved with manufacturing lubricants from biopolymers?
7. What enables RiKarbon to manufacture lubricants suitable for a wide range of customers?

### SYNTHESIS

8. RiKarbon is manufacturing lubricants for hydroelectric dams, which generate electricity by driving huge turbines with fast-flowing streams of water. This can generate huge amounts of excess heat. How does RiKarbon ensure that its lubricants are suitable for use in these turbines?
9. RiKarbon's lubricants might also be used in snowmobile engines. How would these products be different from the lubricants used in hydroelectric turbines?

### EVALUATION

10. Currently, many aspects of our society rely on fossil fuels like petroleum, including manufacturing industries. This will need to change completely if we are to reduce the impact of climate change in the future. How does the work of RiKarbon's researchers tie in to the global effort of decarbonisation?

## ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

1. Create a poster for RiKarbon's research into decarbonised lubricant manufacturing. It should be aimed at other students in your year, who might be considering a future career in green chemistry. Include key facts, figures and diagrams where you can.
2. Carry out your own research and select three other companies that are currently developing decarbonised manufacturing processes. Create a PowerPoint presentation to share with the rest of your class, summarising the innovative techniques they are developing.

## MORE RESOURCES

- Check out RiKarbon's website for more information about the team and their research. You can even delve into some of the other groundbreaking technologies the team is currently working on:

<https://rikarbon.com/>

- The American Chemical Society has some really great green chemistry resources for students and educators, including workshops and the Green Chemistry Summer School:

<https://www.acs.org/content/acs/en/greenchemistry/students-educators.html>