AQA Biology A-Level
Required Practical 10

Investigation into the effect of an environmental variable on the movement of an animal using either a choice chamber or a maze.

Woodlice respond differently to different environments. When they reach an **unfavourable environment**, they **increase** the **frequency** at which they **change direction**, and **move faster**. This increases their chances of finding a more favourable environment, which **increases their chances of survival**. This response is called **kinesis**. A **choice chamber** can be set up to show different environments and will demonstrate kinesis in woodlice as they seek to move to a more favourable environment.

Equipment list
- Choice chamber
- Woodlice
- Water
- Drying agent
- Dark Paper/cardboard
- Paper towels
- Spoon

Method
1. Set up **choice chamber** to have four quadrants as follows: dark and dry, dark and damp, light and dry, light and damp.
2. Use dark paper or cardboard to block out the light on one half. Use wet paper towels to make damp areas. Use a **drying agent** such as **anhydrous calcium chloride** to make dry areas.
3. Place **10 woodlice** in the **centre** of the choice chamber using a **spoon**. Do not use forceps as this may cause harm to them.
4. Leave for 10 minutes.
5. Record how many woodlice are in each quadrant.
6. **Repeat** by moving woodlice back to the centre of the choice chamber and repeating steps 3-4.

Risk Assessment

Hazard	Risk	Safety Precaution	In emergency	Risk Level
Biohazard	Contamination from live specimen	Wash hands after handling	Seek assistance	Low

Analysing Results (Statistical Tests)

- **Chi Squared** can be used to determine whether the observed results differ from the expected results.
- If your value **exceeds** the **critical value** at the **0.05** level of significance, you can **reject the null hypothesis**, as there is a less than 5% probability that your results are due to chance, so there is a **statistically significant** difference between the observed and expected values.

$$X^2 = \sum \frac{(o-e)^2}{e}$$

Where o is the observed frequency and e is the expected frequency

Conclusion

- Woodlice prefer to be in **darker, damp environments**, so a greater number of woodlice are likely to be in the side of the chamber covered with paper or with the damp paper. This is because in unfavourable environments, they **move quickly and change direction often**. Once they reach the dark, damp area, they will stop as this is their favourable environment.