

Chemist interview questions

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What to expect

Chemist interviews mix technical knowledge checks with scenario questions about judgement under pressure, since a lot of the role involves catching problems (an out-of-spec result, a failed synthesis) before they become costly. Expect a panel that includes a technical lead or lab manager who will probe your instrument and method knowledge in some depth, alongside questions about compliance and how you communicate findings to people outside the lab.

- **Technical/process:** Questions about specific instrumentation, methods and how you'd approach an analytical task from start to finish.
- **Scenario/judgement:** Hypothetical situations where a result is unexpected or a deadline is tight, testing how you weigh risk and act.
- **Behavioural:** Past-experience questions about troubleshooting, teamwork and communicating technical findings, usually answered with a specific example.
- **Safety and compliance:** Questions checking your working knowledge of WHS obligations, environmental regulations and lab accreditation standards such as NATA.

Most chemist interviews open with a short walkthrough of your background and the type of lab work you've done, move into technical and scenario questions (sometimes with a panel member from the technical team), and close with compliance and behavioural questions plus your own questions about the lab's equipment and current projects. Some employers add a short written or practical task, such as interpreting a chromatogram or drafting a brief technical summary.

1. Walk me through how you would validate an analytical method, such as an HPLC method, for a new compound.

Why they ask

Method validation is core to reliable lab work and shows whether you understand the full process rather than just running instruments on autopilot.

How to structure your answer

Process walk-through: describe each stage in order (parameters to test, acceptance criteria, documentation) and note where you'd check in with a supervisor or QA before finalising.

Example answer

"I'd start by defining the parameters that matter for the compound, things like specificity, linearity, accuracy, precision and range, based on the intended use of the method. I'd run the compound against known standards to check specificity, then build a calibration curve across the expected concentration range to test linearity. From there I'd run repeat injections to assess precision and spike known amounts into samples to check recovery and accuracy. I'd document every run in the LIMS as I went, not after the fact, and I'd flag any results outside expected tolerance to my supervisor before signing off the method as validated."

2. You get an out-of-specification result on a batch release test the day before a shipment deadline. What do you do?

Why they ask

This tests whether you'll take shortcuts under time pressure or follow proper investigation steps, which matters for product safety and regulatory compliance.

How to structure your answer

Judgement under pressure: state the immediate action, the investigation steps you'd follow, and who you'd escalate to, showing you protect quality over speed.

Example answer

"I wouldn't release the batch regardless of the deadline. I'd first check for an obvious lab error, things like instrument calibration, sample prep or a mislabelled standard, and rerun the test if that's a possibility. If the result holds, I'd document the finding and raise it with my supervisor and QA straight away so an out-of-specification investigation can start formally. The deadline is a business problem for others to manage. My job is to make sure the data going into that decision is accurate."

3. Tell me about a time you had to explain a technical finding to someone without a chemistry background.

Why they ask

Chemists regularly write reports and present findings to production, management or clients who don't share their technical vocabulary.

How to structure your answer

STAR: set the situation and who the audience was, the task you needed to achieve, the action you took to simplify without losing accuracy, and the result.

Example answer

"During a formulation trial, I found that a raw material change was affecting product stability, and I needed to explain this to the production manager who wasn't across the chemistry. Instead of describing the reaction mechanism, I focused on what it meant practically: shelf life would shorten unless we adjusted the formulation or sourced a different grade of material. I used a simple graph showing stability over time rather than raw chromatography data. The production manager understood the trade-off immediately and we agreed to trial an alternative supplier before the next production run."

4. How do you make sure your lab work stays compliant with WHS and environmental regulations around chemical handling and disposal?

Why they ask

Compliance failures in a chemistry lab can be serious, so employers want evidence you treat this as routine practice rather than an afterthought.

How to structure your answer

Knowledge check: describe your working understanding of relevant obligations and how you apply them day to day, not just in theory.

Example answer

"I keep Safety Data Sheets up to date and accessible for anything I'm working with, and I check them before handling an unfamiliar compound. I follow the lab's waste segregation procedures for chemical disposal rather than assuming one bin fits all, and I use appropriate PPE and fume hood practices as standard, not just when someone's checking. Where a lab holds NATA accreditation, I make sure my documentation and calibration records support that accreditation rather than creating gaps during an audit."

5. How would you approach analysing a large set of chromatography data to spot a trend or an anomaly?

Why they ask

Data analysis skills, including basic scripting, are increasingly expected of chemists working with repeated instrumental runs.

How to structure your answer

Process walk-through: outline how you'd organise, clean and interpret the data, mentioning any tools you'd use.

Example answer

"I'd start by pulling the run data out of the LIMS into a structured format I can work with, usually in Python, and check for obvious outliers or instrument drift across the batch. I'd plot key metrics like retention time and peak area over the run sequence to see if there's a gradual trend, which often points to column degradation or calibration drift rather than a genuine sample issue. Once I've ruled that out, I'd look at the anomaly against the actual sample composition to see if there's a real chemical explanation, and write up whichever conclusion the data actually supports."

6. Describe a situation where a synthesis or formulation didn't go as planned. How did you troubleshoot it?

Why they ask

Practical troubleshooting under uncertainty is a daily reality in applied chemistry roles, and this question checks your problem-solving process rather than just the outcome.

How to structure your answer

STAR: outline the situation and what went wrong, the systematic steps you took to isolate the cause, and what you learned or changed as a result.

Example answer

"I was working on a formulation that kept failing a stability test, showing separation earlier than expected. Rather than guessing, I went back through each stage of the process, checking raw material batches, mixing order and temperature control, one variable at a time. It turned out a change in supplier for one ingredient had altered its particle size, which affected how it dispersed. Once I identified that, I adjusted the mixing procedure to compensate and reran the stability test, which passed. I also flagged the supplier change to the team so we could add an incoming material check for that ingredient going forward."