MyAmici

LabOps Safety by Design

How smarter procurement decisions create safer labs, stronger compliance, and enable scientific progress.

by Alison Crowley and Caroline Briggs

What this guide covers

Lab safety compliance in biotech: why HSE gets deprioritized and what to do about it

Health, safety, and environment (HSE) compliance is one of the highest-consequence responsibilities in biotech lab operations – yet it is routinely deprioritized, managed reactively, or left without adequate systems.

In start-ups and scale-ups, lean teams and tight deadlines push HSE to the margins. In mature enterprises, the challenge shifts: hazardous materials circulate across multiple labs, departments, and locations without the centralized oversight needed to manage risk at scale.

The consequences are significant. CEOs face personal liability under UK corporate manslaughter law. Inadequate HSE controls can jeopardize funding rounds and trigger lab shutdowns. For biotech organizations at any stage of growth, leaving safety to chance is not a viable operating position.

This guide sets out six principles for embedding safety into biotech lab operations through smarter procurement and intake controls – so that compliance becomes part of the workflow, not a task bolted on top of it.

It is written for operations and facilities leaders, scientists who want to reduce compliance friction, and HSE professionals looking to embed safety into everyday lab processes. The approach is grounded in LabOps practice: pragmatic, workflow-based, and designed to make the safer choice the easier one.

Six principles for LabOps Safety by Design

PRINCIPLE 01 — 01

Put safety where decisions happen.

Embed hazard visibility and approval gates at the point of purchase, not after delivery.

PRINCIPLE 02 — 02

Make compliance the easiest path.

When the safest option is also the fastest, people follow it by default.

PRINCIPLE 03 — 03

Two interception points, not one.

Catch risks at requisition and again at goods-in. One checkpoint isn't enough.

PRINCIPLE 04 — 04

Scientists assess. Systems prompt.

Scientists own the risk assessment. The system ensures it happens and records it.

PRINCIPLE 05 — 05

Audit trails as a by-product.

Every order, approval, and document link creates a permanent, auditable record.

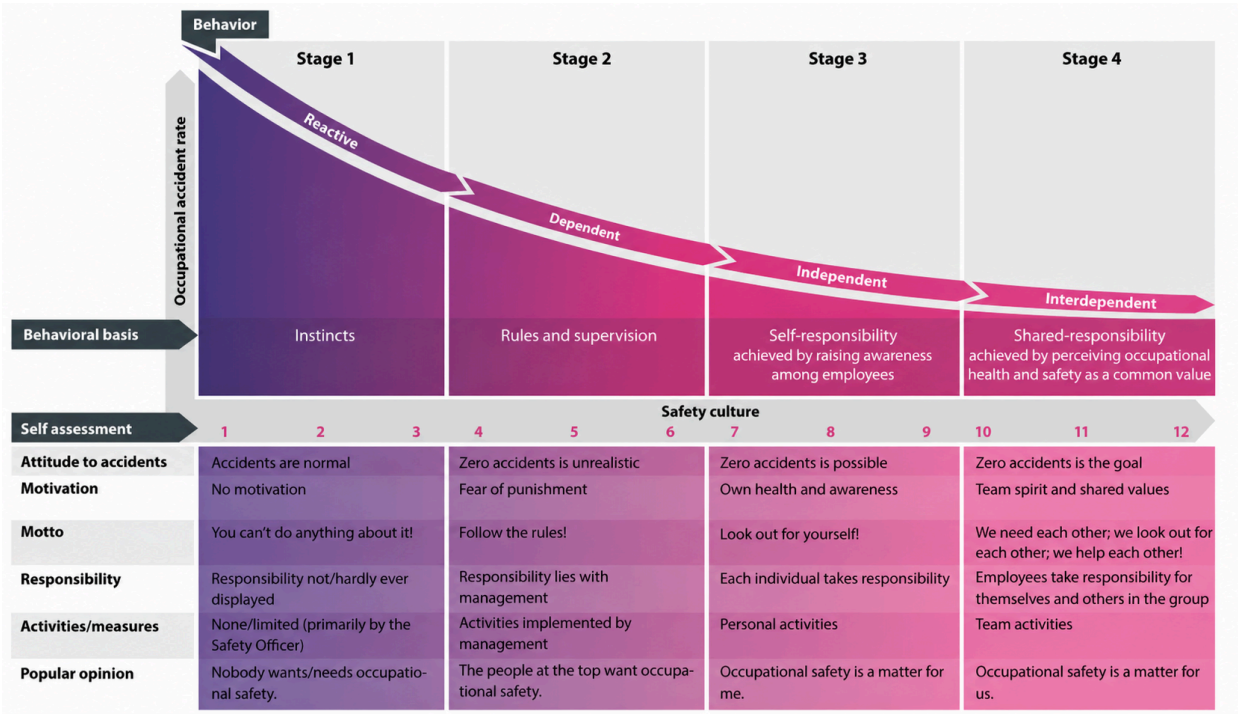
PRINCIPLE 06 — 06

Safety culture starts at the top.

If senior leadership doesn't visibly commit, nothing changes on the lab floor.

How to assess your lab's safety culture maturity using the Bradley Curve

The Bradley (DuPont) Safety Culture Curve maps how organizations mature their approach to safety, broken into four stages: reactive, dependent, independent, interdependent.



The four stages describe how safety behavior evolves as organizations mature. At the **reactive** stage, safety is incident-driven: teams respond to problems but do not anticipate them. At the **dependent** stage, compliance exists but relies on rules, supervision, and external pressure to function. The **independent** stage sees individuals taking personal responsibility for safety without needing to be told. At the **interdependent** stage, the most mature, safety is a shared organizational value, embedded in culture and sustained without enforcement.

What the Bradley Curve reveals about your lab's safety maturity

Early-stage biotechs typically enter the curve at the reactive stage. HSE is rarely anyone's formal priority, and most teams engage with safety only when a near-miss or incident forces the issue. With lean teams and competing demands, this is understandable, but it is also where the highest-consequence risks tend to go unmanaged for longest.

Mature enterprises face a different version of the same challenge. The reactive stage is usually behind them, but scale introduces its own vulnerabilities. Hazardous materials move across multiple labs, departments, and locations. Procurement decisions are made by a wider range of people with varying levels of safety awareness. The structural visibility that was straightforward at ten people becomes genuinely difficult at five hundred. Organizations that believe they have outgrown the curve often discover, at audit or incident, that dependent-stage behaviors are more embedded than they realized.

Moving up the curve is an organization-wide undertaking at any stage of growth. It spans documentation, training, incident reporting, waste management, equipment maintenance, and leadership commitment.

THE PURPOSE OF THIS EBOOK

This guide focuses on one critical slice: **embedding safety into how your lab buys and what it takes in.** That is where many of the highest-consequence risks cross the threshold, and where the most immediate gains are available – whether you are building safety infrastructure for the first time or identifying the gaps that scale has created.

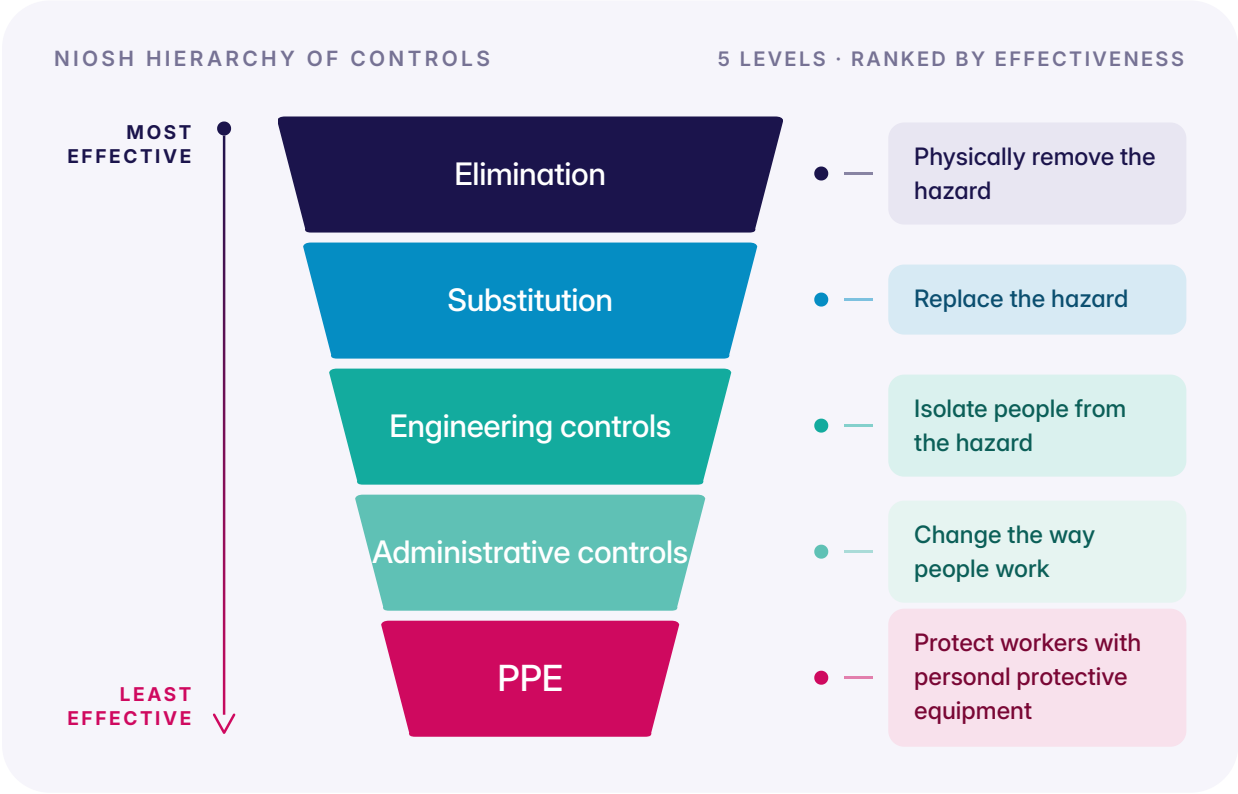
PRINCIPLE 01 · PROCUREMENT

Why procurement is your lab's first and most important safety decision

Hazard controls at the point of purchase outperform PPE and reactive measures

The **Hierarchy of Controls** below explains why procurement matters. PPE sits at the bottom, the last line of defense, with the scientist still in contact with the hazard. Elimination and substitution sit at the top, and both happen *before* anything enters the building. That makes the purchase the first real safety decision, not the last.

Here's a scenario most labs will recognize. A scientist orders a chemical, it arrives, the SDS is missing, and the COSHH assessment is incomplete. The experiment stalls while someone chases paperwork. Or worse, work begins without the correct safety measures in place, exposing scientists to avoidable risks. Either way, the hazard is already through the door.



SDS vs COSHH assessment: why labs need both and what happens when they confuse them

In one biotech, a scientist had checked a COSHH assessment was in place for the substance they required, but failed to review whether the document included safety measures for their intended use. Using the substance at a different pH resulted in an unplanned chemical reaction, forcing an evacuation and hours of downtime. An SDS describes a substance's hazards. It doesn't assess how you're using them. Treating one as the other is how routine orders become systemic risk.

Embedding hazard information into procurement prevents lab safety failures

The same scenario, redesigned. The scientist opens a requisition and selects a chemical. This time, the hazard information is visible at the point of purchase – GHS pictograms and H-codes surfaced directly in the ordering interface, rather than buried inside an SDS that may never be opened.

The order will not progress without an up-to-date risk assessment in place. What sounds like a constraint operates as the opposite. Scientists begin planning ahead, resolving documentation before they order rather than scrambling after delivery. The hazard flag also prompts many to search for a safer alternative – and where a non-hazardous version exists, the order proceeds immediately with no risk assessment required at all. More often, a less hazardous version is found: a risk assessment is still required, but the risk to the end user is much reduced, and containment and disposal requirements are often lighter. Still a win.

The organizational effects compound from there. Leadership gains real-time visibility into what is being purchased and by whom. Procurement decisions that would previously have crossed the threshold unnoticed are now visible, documented, and accountable. A safety-first culture does not need to be mandated – it develops as a natural consequence of systems that make the safer choice the more convenient one.

PRINCIPLE 02 · COMPLIANCE

How to make lab safety compliance the default behavior, not a burden

Why lab safety compliance fails when the workaround is faster than the process

When the compliant route is slower than the workaround, people will take the workaround. This is not a cultural failing – it is a predictable response to competing priorities and time pressure. The solution is not to demand more discipline from already stretched teams. It is to make the compliant option the fastest one.

That is the central logic of safety by design: when the careful choice is also the easiest choice, it becomes the default. The lab doesn't need to try harder. The system does the work.

Three ways smarter lab procurement workflows make safe choices the default

The following three scenarios illustrate how well-designed procurement workflows remove friction from compliance rather than adding to it.

Hazardous reagent – Safer alternative identified at point of order

A scientist selects a hazardous reagent and the system flags the associated risk at the point of purchase. Prompted to consider alternatives, they identify a safer substitute and switch. If a completely non-hazardous version is found, the order proceeds immediately with no risk assessment required. More often, a less hazardous version is identified – a risk assessment is still required, but the risk to the end user is reduced, and containment and disposal demands are lighter. Either way, the system has surfaced the choice and recorded it.

Restricted material – Approval routing handled automatically

A request for restricted material (biological material or anything that requires a permit or a license) is submitted and routes directly to the appropriate HSE approver without any chasing or ambiguity about sign-off authority. The approval returns with a prompt to confirm appropriate permissions and safety documentation, and the order moves forward. The compliant path is also the most direct path to a delivered reagent.

Human tissue – Consent verification built into the workflow

An order for human tissue will not progress until consent documentation and confirmation of permitted use are produced. Scientists are not expected to remember the requirement. The workflow enforces it, removing the risk of an oversight that would otherwise expose the organization under the Human Tissue Act.

How small procurement controls accumulate into a stronger lab safety culture

Taken together, these small interventions reshape the everyday decisions that drive lab safety. Documentation accrues as a by-product of normal activity rather than a separate administrative task. Compliance becomes the grain of the organization rather than something imposed against it. Over time, the whole organization advances along the Bradley Curve – not through a single cultural initiative, but because the systems supporting daily work have made the safer path the easier one.

Friction-heavy compliance

Scientist places order

1. **Order arrives at goods-in**
   SDS missing
2. **Search supplier website**
   find SDS manually
3. **Can't interpret hazard data**
   refers to HSE approver
4. **HSE flags as hazardous**
   sent back to scientist
5. **No risk assessment exists**
   scientist writes one
6. **RA reviewed and approved**
   physical barriers ordered if needed
7. **Order finally released**
   days or weeks later

Compliant order delivered

7 steps • days or weeks of delay

⚠ **Assumes it gets caught at goods-in.** If it doesn't, the hazard reaches the bench unassessed.

Embedded compliance

Scientist places order

1. **System flags as hazardous**
   risk visible at point of order
2. **Risk assessment referenced**
   scientist reviews or creates risk assessment before progressing
3. **Auto-routed to HSE approver**
   no chasing required
4. **Approved in minutes**
   system logs it
5. **Order placed**
   documentation already complete

Compliant order placed

5 steps • minutes not days • *audit trail builds itself*

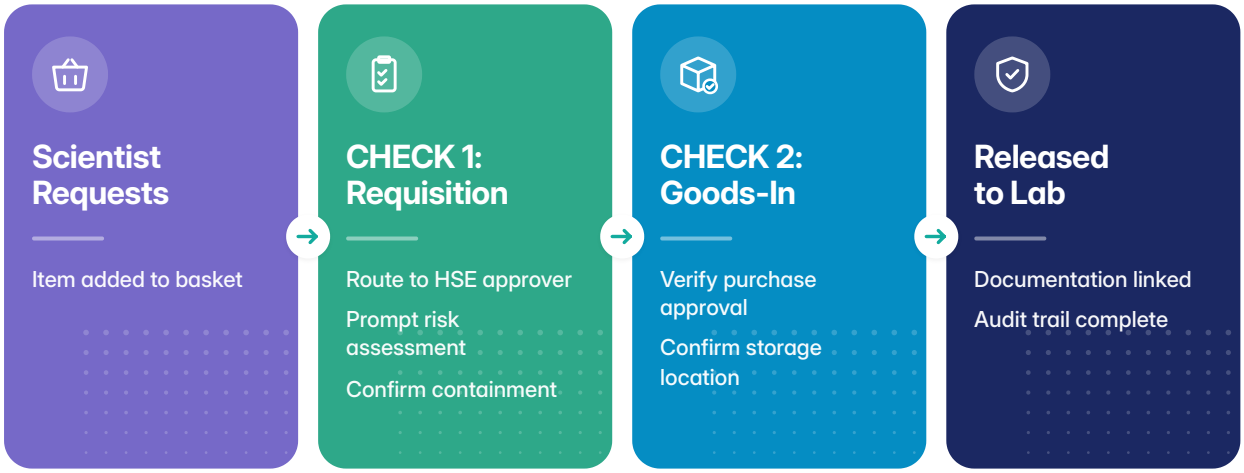
PRINCIPLE 03 · VERIFICATION

Requisition and goods-in: why lab safety requires two checkpoints, not one

Why single-checkpoint lab procurement systems are a structural safety risk

Requisition catches what's coming. Goods-in catches what actually arrived. Either checkpoint alone will eventually fail, because every process has an off day, and because the thing that's ordered isn't always the thing that turns up. Run them together and you build a system that absorbs the failures of each individual check.

Two Interception Points



BSL vs UK containment level: why biological materials require independent verification at goods-in

Biological materials are where the two-checkpoint discipline earns its keep. BSL (the US Biosafety Level classification) and CL (the UK Containment Level classification) are not the same thing, and the UK has stricter classification rules in several common cases. UK labs must always verify the UK containment level independently.

You cannot rely on a supplier's BSL labeling, regardless of where the supplier is based. Many UK suppliers use BSL classifications because they sell globally, and the two systems don't always align. For UK verification, the authoritative sources are the Advisory Committee on Dangerous Pathogens (ACDP) guidelines and the HSE Biological Agents approved list. Every biological order should be verified against them before it proceeds.

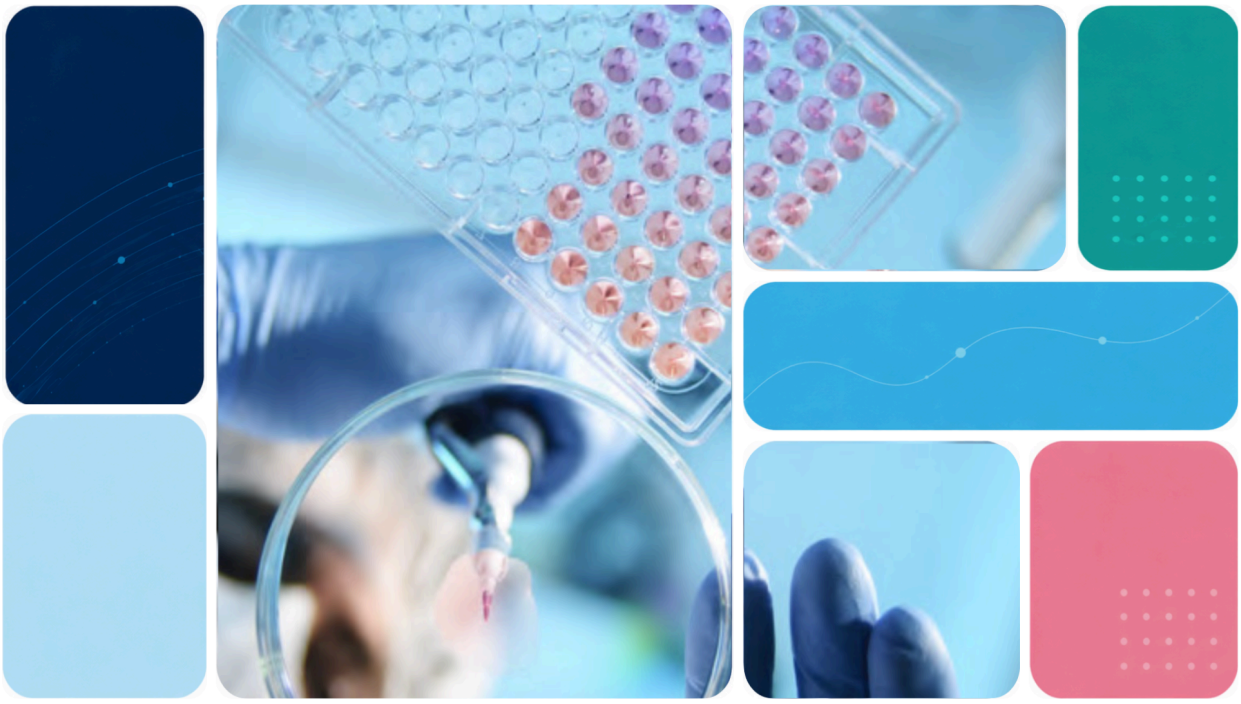
CASE STUDY Field evidence · Two-checkpoint interception

How a goods-in checkpoint intercepted a Hazard Group 3 cell line dispatch error

At one organization, a Hazard Group 3 cell line was dispatched to a lab that had no permissions to handle it. Under a single-checkpoint system, that material would have reached the bench before anyone realized, and the organization would have been looking at immediate compliance exposure, operational disruption, and a specialist disposal problem it wasn't set up to handle.

Instead, the goods-in team caught the discrepancy, held the delivery back, and logged the incident. The first checkpoint had missed it, but the second one didn't, and the cell line never made it past the loading bay. The ordering process was tightened afterwards, and no work was ever done at the wrong containment level.

A near-miss, properly caught, properly recorded



PRINCIPLE 04 · DIVISION OF LABOUR

How to divide lab safety responsibilities between scientists and procurement systems

Knowing where to draw the line between people and processes in LabOps

Effective lab safety depends on a clear division of labour: the activities that require scientific expertise and judgment, and the activities that simply require nothing to be forgotten.

The second category is recurring, order-level compliance verification: the same checks, on every order, regardless of who is placing it or what they are ordering.

SCIENTISTS OWN

Expertise & judgment

Experimental design, risk assessment, ethical review, consent evaluation. These demand contextual scientific judgment that no workflow can replicate.

WORKFLOW OWNS

Recurring verification

The same checks, on every order, regardless of who is placing it or what they are ordering. Recurring, order-level compliance – not contextual judgment.

None of it requires scientific expertise – only that nothing is missed, which is exactly where manual processes, busy scientists, and competing priorities combine to create risk.

FIVE COMPLIANCE QUESTIONS WORKFLOW AUTOMATION HELPS ANSWER

01 Has the COSHH assessment been updated since the last process change?

02 Is the consent documentation attached and does it cover the intended use?

03 Has the containment level been independently verified this quarter?

04 Is the safety documentation accessible to the person placing the order?

05 Is there a current record of who is trained to handle these materials?

Human Tissue Act compliance in biotech: why consent verification cannot be left to memory

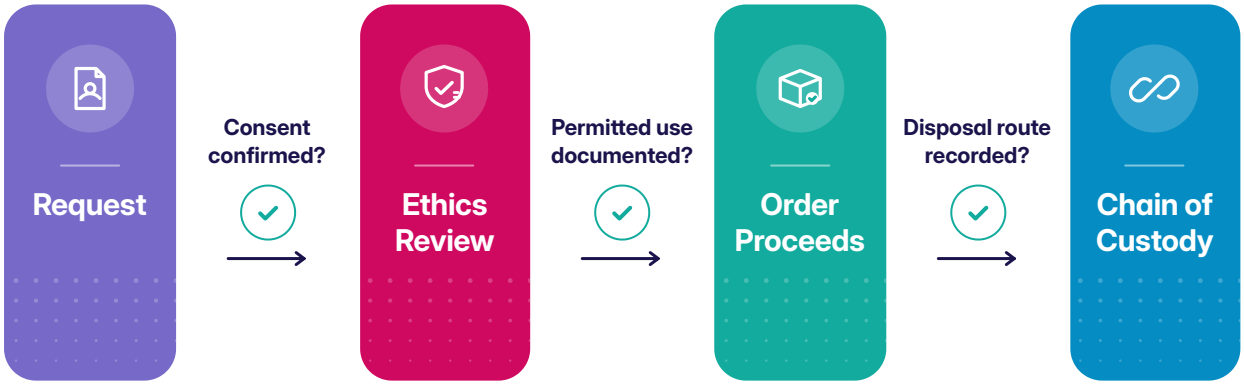
When a lab sources human PBMCs from a new supplier, the consent language may differ materially from what the team has used before. Whether the permitted use covers the intended research is a question only a scientist can answer. It requires reading the documentation carefully and applying contextual judgment to the specific experimental purpose.

The workflow does not rely on the scientist remembering to follow each compliance step. The order will not progress until the consent documentation is attached and the permitted use is confirmed in writing. The scientist cannot forget to do it, because the system will not allow them to move past it.

The consequences of getting this wrong are serious and compound quickly. Using human biological material outside the terms of consent invalidates the research and creates direct criminal exposure under the Human Tissue Act 2004. This isn't just a risk for the organization, individual scientists and end users can be held personally liable for unlicensed storage or use of controlled material, with penalties including prosecution and up to three years' imprisonment.

The division is clean: the scientist reads and judges; the system verifies and records. Neither step is optional, and neither depends on the other being remembered.

Ethics Decision-Gate Flow



PRINCIPLE 05 · AUDIT TRAIL

How to build a continuous lab safety audit trail without extra admin

Why reactive lab audit preparation creates compliance gaps and how to avoid it

Audits are designed to find what is missing. Organizations that treat documentation as an audit-week activity will reliably give inspectors something to find.

When every order, approval, and compliance check is captured as a natural by-product of the procurement workflow, there is nothing to prepare. The audit trail exists in real time, complete and retrievable. Inspectors receive a structured record of activity rather than a hastily assembled folder, and the team continues its normal work without interruption.

The difference is not in the rigor of the compliance effort. It is in when and how the documentation is created.

CASE STUDY · Field evidence · Audit trail collapse under pressure

Case study: the hidden cost of missing procurement controls when hazardous materials arrive untracked

Consider the lab that accidentally ordered highly explosive materials it had no capability to handle. Nothing flagged the purchase, the materials arrived, and the organization was suddenly staring down an immediate high-risk situation and weeks of specialist disposal.

The cost wasn't just the disposal, it was the reconstruction afterwards. No purchase rationale, no approval trail, no record of who authorized what. Every question had to be answered from old emails and half-complete records. That's what an absent audit trail costs when the moment arrives.

⚠ A trail that should have existed, reconstructed under pressure

Schedule 5 pathogens, radioactive materials, and chemical weapons: the regulatory consequences of failed lab controls

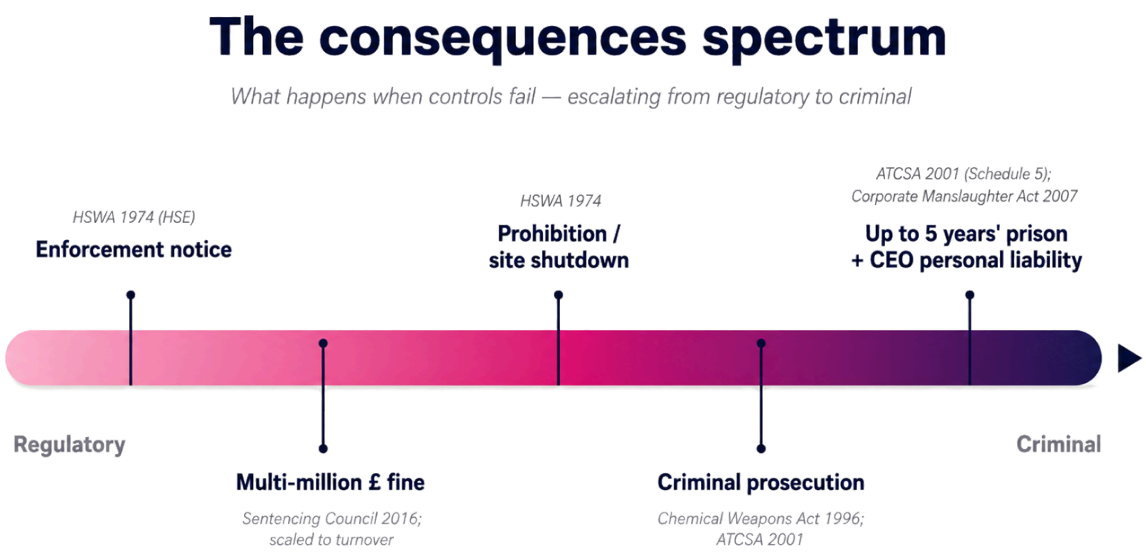
For restricted materials, the consequences are scaled to match. Schedule 5 pathogens, Schedule 1 chemical weapons, and radioactive materials without permits sit at the sharp end of the spectrum. None of this is theoretical, and none of it is something you want to learn about from the wrong side of an investigation.

HMRC excise records and DSEAR: how routine lab audit compliance starts with procurement tracking

You don't need a restricted materials incident to prove the case. Take something as mundane as ethanol.

Duty-free spirits require records of receipts, usage, and stock under HMRC excise rules, and those records must be available for inspection. Separate storage from general flammables isn't strictly required, but it makes both HMRC compliance and fire safety obligations under DSEAR far easier to demonstrate – which is why most well-run labs do it anyway.

Labs that track it in the same workflow have the numbers ready when auditors ask. Labs that don't spend the week before an audit pulling invoices and counting bottles in a cupboard. Same regulatory obligation, same data, very different week.



PRINCIPLE 06 · LEADERSHIP

Why leadership commitment is the foundation of lab safety culture in biotech

Leadership visibility is the prerequisite for effective lab safety systems

Robust controls, streamlined compliance pathways, dual-checkpoint procurement, clearly divided responsibilities, and self-building audit trails – the first five principles of this guide can all be in place and functioning well. Without visible leadership commitment, none of it holds.

Organizations take their safety culture from the top. When senior leaders treat HSE as a delegated inconvenience rather than a strategic priority, that message reaches every level of the organization quickly and quietly. The systems may exist on paper, but the behavior they depend on will erode.

This dynamic becomes more consequential as organizations scale. A small lab operates on proximity and familiarity – at ten people, informal oversight fills the gaps that formal systems leave open. As headcount grows, that informal layer disappears. New staff arrive without institutional knowledge. Materials accumulate without adequate records. Processes that relied on a small team's shared awareness begin to fail silently, often without anyone noticing until an audit or incident makes the gap visible. At that point, the cost of remediation is considerably higher than the cost of the systems that would have prevented it.

CASE STUDY Field evidence · Leadership-led culture shift

How a UK biotech's rapid growth exposed a critical gap in hazardous substance management

One UK biotech reached exactly that point. A hazardous chemical was found on a shelf with no record of who ordered it, why it was there, or how it should be handled. Staff had been put at unnecessary risk, and the company had no clear route to dispose of it safely. The spreadsheet-led system that worked at ten people no longer worked at fifty.

Leadership backed a shift to embedded, workflow-based hazardous substance management. Controls were designed into procurement and project workflows rather than bolted on. The culture shift followed because the systems supporting it made the safer path the easier one.

Safer path made the easier path, by design

"I knew things had to change when I came across a seriously hazardous chemical sitting casually on the shelf. No one seemed to know how it got there, or what it was being used for."

LAB MANAGER

"Instead of implementing heavy-handed approval processes that killed innovation and speed, MyAmici helped us build safety intelligence directly into our procurement and project workflows."

HEAD OF FACILITIES

UK corporate manslaughter law: why senior leaders bear personal liability for lab safety failures

Under UK corporate manslaughter rules, senior leaders can be held personally liable when an organization's gross failure to manage safety causes a death. The principle that safety culture starts at the top has legal weight behind it, not just cultural weight. It's how the law is written.

CLOSING

Next steps for building a safer lab: diagnostic tools, further reading, and expert support

DIAGNOSTIC · 5 MIN

Diagnose where your lab sits on the Bradley Curve.

A short diagnostic that shows where your lab sits today and where the biggest wins are available – across all six principles.

Take the LabOps Safety Quiz →

Further reading

HSE guidelines, UK biotech case studies, and lab safety legislation across UK, US, and EU.

01 CASE STUDY
HSE case study: scaling UK biotech

02 REFERENCE
Legislation quick reference — HSE biosafety