Train the People Who Create the Work



Safety programs spend enormous effort teaching workers how to manage hazards that other people had an opportunity to eliminate, reduce or reshape months earlier. Better safety training must move upstream.

The employee at the machine receives guarding training. The maintenance technician receives lockout training. The driver receives defensive-driving training. The construction worker receives fall-protection training. The warehouse employee receives lifting instruction. When something goes wrong, the first question is often whether the worker was trained.

But long before that worker encountered the hazard, other people made decisions that shaped the exposure. Someone selected the equipment. Someone specified the layout. Someone approved the production target. Someone chose the contractor. Someone compressed the schedule. Someone selected the material. Someone designed the maintenance access. Someone promised the customer a delivery date.

Those people may never enter the hazardous area, yet their decisions can make safe work easier, harder or sometimes nearly impossible. If safety training focuses only on the employee closest to the hazard, organizations are training at the end of the risk chain rather than at the beginning.

> **Frontline safety training teaches people to work safely inside the system. Upstream safety training teaches decision-makers to create a safer system in the first place.**

The upstream safety gap

Traditional safety programs are often excellent at downstream controls. They train workers, write procedures, provide PPE, conduct inspections and supervise behaviour. Those activities matter. The problem is that many hazards were shaped before any of those controls became necessary.

NIOSH’s Prevention through Design approach addresses exactly this issue. NIOSH defines PtD as a proactive approach that includes safety measures in the design of work equipment, tools, operations and spaces, and says it is most effective

during early planning and design. The program extends across the life cycle of premises, tools, machinery, substances and work processes. In simple terms, the earlier a hazard can be eliminated or minimized, the less the organization has to depend on workers managing it correctly every day.

That suggests a training question many organizations have not asked: have we trained the people whose decisions create the work?

Who creates the work?

The answer is broader than engineers. Work is designed continuously by people in commercial, operational and support functions. Some design equipment and facilities. Others design deadlines, staffing models, workflows, purchasing standards, contractor interfaces or customer commitments.

Role	Decision that can shape safety exposure
Procurement	**Equipment, chemicals, PPE, vehicles, replacement parts, vendor requirements.**
Engineering and design	**Layouts, access, guarding, maintainability, energy isolation, ergonomics.**
Project management	**Sequencing, contractor interfaces, schedule compression, site logistics.**
Scheduling and operations planning	**Shift patterns, task overlap, maintenance windows, workload.**
Sales and customer teams	**Delivery commitments, scope promises, turnaround expectations.**
Finance and capital planning	**Deferred replacement, maintenance funding, equipment investment.**
HR and workforce planning	**Staffing levels, onboarding timing, temporary labour, fatigue exposure.**
Senior leadership	**Priorities, incentives, resource trade-offs and acceptable operating margins.**

Procurement is a safety function whether it knows it or not

A purchasing decision can quietly alter the risk profile of an entire operation. A replacement chemical may require different controls. A cheaper ladder may not suit the work. New gloves may reduce dexterity. A machine may meet production specifications but be difficult to isolate for maintenance. A vehicle option may remove a visibility feature drivers have relied upon. A replacement part may require a different service procedure.

Procurement staff do not need to become industrial hygienists or engineers. They do need enough safety literacy to recognize when a purchasing decision should trigger technical review before the product enters the workplace.

- Does this purchase introduce a new hazard, energy source, chemical exposure or ergonomic demand?
- Does existing training still apply?
- Will maintenance or cleaning require new access or procedures?
- Are guards, interlocks or safety features included in the base specification?
- Could workers predictably defeat a feature because it makes the job impractical?
- Does the change require new PPE, inspection, competency or emergency planning?

That is not purchasing red tape. It is a gate that prevents risk from being bought into the organization.

Scheduling can create hazards without touching the work

A scheduler may never wear a hard hat, yet scheduling choices can affect fatigue, task overlap, contractor congestion and the time available for maintenance. A safe eight-hour shutdown compressed into four hours does not simply create a productivity challenge. It changes the conditions under which people make decisions.

The same is true when multiple trades are booked into the same area, a critical maintenance window is shortened, overtime becomes chronic, crews rotate rapidly between days and nights, or work is sequenced so one crew creates an exposure for another. Upstream training should teach planners to see these as safety-relevant design decisions.

> **Time is a control resource. When a schedule removes the time required to perform a control correctly, the schedule has changed the risk.**

Project managers design interfaces

Project managers sit at the junction of scope, schedule, budget, contractors, customer expectations and operations. That makes them powerful safety designers even when safety is not in their title.

Many serious events occur at interfaces: contractor and host employer, pedestrian and vehicle, maintenance and production, one trade above another, startup after shutdown, temporary systems replacing permanent ones. These are project-management problems as much as frontline behaviour problems because someone has to identify and coordinate the interface before the work starts.

Training for project managers should therefore include more than a generic leadership module. It should teach them to ask which crews interact, what changes during each project phase, which temporary conditions are being introduced, what assumptions different contractors are making and who has authority to stop or resequence work when the plan no longer fits reality.

Sales commitments can propagate into safety risk

This is one of the least discussed upstream risks because the original decision may happen far from operations. A salesperson agrees to a delivery date. The commitment becomes a production target. Operations adds overtime. Maintenance is postponed. A supervisor compresses setup time. Workers improvise to recover the schedule.

The salesperson did not direct anyone to bypass a guard or skip an inspection. Yet the commercial commitment created pressure that travelled through the system. Upstream training does not mean teaching salespeople how to run machinery. It means helping them understand which commitments require operational review before they become promises.

Organizations can establish escalation triggers: unusual turnaround times, major scope changes, nonstandard materials, unfamiliar client sites, work outside normal staffing windows or commitments that depend on deferred maintenance. The training goal is recognition. When a commercial decision changes how work must be performed, safety should be part of the approval conversation.

Engineering can eliminate what training can only manage

This is the clearest Prevention through Design example. NIOSH describes PtD as designing work to remove hazards and calls it the most reliable and effective way to protect workers. If a hazard can be eliminated through design, the organization no longer has to rely on every worker remembering, every supervisor enforcing and every shift maintaining a lower-level control indefinitely.

Downstream training question	Upstream design question
How do we train workers to maintain three points of contact?	Can routine access be designed at ground level or with fixed stairs and platforms?
How do we train workers to avoid the pinch point?	Can the pinch point be guarded or eliminated?
How do we improve lockout compliance?	Can isolation points be made accessible, obvious and practical to use?
How do we reduce lifting injuries?	Can the material, package, lift height or handling equipment be redesigned?
How do we keep pedestrians away from mobile equipment?	Can traffic routes physically separate people and vehicles?

Training remains necessary, but the design question should come first whenever the organization has meaningful control over the source of exposure.

The DESIGN framework for upstream decision-makers

A practical upstream training program needs a simple decision model that people outside the safety department can use. DESIGN gives managers, planners and support functions six questions to apply before a decision becomes operating reality.

Step	Question
D — Define the work	What are we asking people to accomplish, under what conditions and with what constraints?
E — Eliminate first	What hazard can be removed or reduced before the work reaches the employee?

Step	Question
S — Sequence safely	**What happens before, during and after this activity, and which tasks overlap?**
I — Identify interfaces	**Where do people, contractors, equipment, departments or changing conditions intersect?**
G — Give adequate resources	**Do workers have enough time, staffing, equipment, competence and supervision?**
N — Notice downstream consequences	**What new exposure could this decision create somewhere else in the system?**

Define the work before optimizing it

Organizations often optimize one variable before understanding the whole job. Procurement optimizes cost. Sales optimizes customer responsiveness. Operations optimizes throughput. Scheduling optimizes utilization. Each objective is legitimate, but a local optimization can transfer risk downstream.

Defining the work means identifying the real task, environment, users, maintenance needs, foreseeable variations and constraints before choosing the solution. It prevents a decision-maker from optimizing a spreadsheet while someone else absorbs the operational consequences.

Eliminate before adding another rule

A common organizational reflex is to respond to a risk with a procedure or training requirement. DESIGN forces an earlier question: can the hazard be removed, isolated or reduced through a higher-level control? This is consistent with the hierarchy of controls and with NIOSH’s PtD process, which emphasizes moving toward controls that require less continuous human action.

Sequence the work safely

Work rarely exists as a single task. Startup, cleaning, delivery, maintenance, changeover, shutdown and contractor activity create transitions. Upstream decision-makers should be trained to map the sequence and ask where one activity changes the risk of another.

Identify interfaces before they become conflicts

Interfaces are where assumptions collide. The host assumes the contractor understands the traffic pattern. The contractor assumes production will be

stopped. Maintenance assumes the line is available. Operations assumes maintenance will work around production. The upstream training goal is to surface these assumptions before people have to reconcile them in the field.

Give the work what safe execution requires

A procedure may specify two workers, a lift device, a 30-minute isolation, a spotter or a particular tool. If planning does not provide those resources, the organization has created a predictable gap between work as planned and work as executable. Resource adequacy is therefore a safety-design question, not merely a productivity question.

Notice the risk that moves elsewhere

A change can improve one part of the system while making another less safe. Moving stored material may clear an aisle but block emergency access. Increasing packaging strength may increase manual handling load. Reducing delivery frequency may create larger individual loads. Automation may remove one repetitive task but create new maintenance and interaction hazards. Upstream training should teach people to look for transferred risk rather than declaring success when one metric improves.

What upstream training should look like

The solution is not to place procurement, sales and project managers in the same courses as machine operators. Upstream safety training should be role-specific and decision-based. It should use the kinds of choices those employees actually make.

Audience	Training focus	Useful exercise
Procurement	**Change-risk recognition and safety specifications**	**Compare two vendor proposals and identify hidden safety differences.**
Project managers	**Interfaces, sequencing and temporary conditions**	**Review a project plan and map where trades or phases create shared exposure.**
Schedulers	**Fatigue, overlap, maintenance windows and resource adequacy**	**Rebuild a compressed schedule without removing critical controls.**
Sales leaders	**Operational feasibility and escalation triggers**	**Evaluate customer commitments that should require operations approval.**

Audience	Training focus	Useful exercise
Engineers	**Hierarchy of controls, maintainability and lifecycle exposure**	**Redesign a recurring maintenance task to reduce reliance on procedures and PPE.**
Executives	**Incentives, resource trade-offs and leading indicators**	**Trace how a strategic target could create unplanned pressure downstream.**

Teach with decisions, not safety slogans

A procurement employee does not need another presentation telling them that safety is everyone’s responsibility. Give them a purchasing decision with an ambiguous safety consequence and require them to decide whether to approve, reject or escalate it. A scheduler should work through a realistic maintenance conflict. A project manager should identify contractor interfaces. A sales leader should decide whether a client promise can be made without an operational review.

The learning objective is not technical mastery. It is decision recognition: knowing when a normal business choice has crossed into a safety-significant choice and what process should follow.

Use frontline workers as design intelligence

NIOSH’s PtD process emphasizes collaboration among people with different types of work experience. That matters because the person who uses, maintains, cleans or troubleshoots equipment often sees design problems long before they appear in a capital review.

Upstream training should therefore teach decision-makers how to gather worker input before finalizing changes. Ask maintainers whether isolation points are accessible. Ask operators what will happen during a jam. Ask drivers where visibility is poor. Ask cleaners whether guards have to be removed. Ask contractors which interfaces are unclear. This is not a substitute for engineering analysis. It is operational intelligence that improves it.

> **The people who inherit a design should have a voice before the design becomes something they have to work around.**

Five organizational practices that reinforce upstream training

1. Add a safety-impact question to purchasing, project, change-management and capital approval forms.
2. Define escalation triggers so non-safety functions know when technical review is mandatory.
3. Include operations, maintenance and worker representatives in design or change reviews where their experience is relevant.
4. Review incidents and near misses for upstream decisions, not only frontline actions.
5. Measure how often hazards are eliminated or reduced through design rather than only how often workers complete training.

Do not turn upstream safety into bureaucracy

A legitimate concern is that adding safety review to every decision can slow work and encourage checkbox behaviour. The answer is not to review everything at the same depth. It is to define decision thresholds.

Routine purchases that are true like-for-like replacements may require minimal review. New chemicals, new equipment, changed guarding, changed workflow, compressed schedules, unfamiliar contractors or substantial process changes deserve more. Training should teach people to identify which category they are in and route the decision accordingly.

A practical 60-day implementation

Phase	What to do
Days 1–15	**Choose two upstream functions with high influence on risk. Review recent incidents and changes to identify where their decisions contributed to exposure.**
Days 16–30	**Build role-specific decision scenarios and define clear escalation triggers. Introduce the DESIGN framework.**
Days 31–45	**Pilot with a small group. Ask participants to apply DESIGN to current purchasing, scheduling, project or change decisions.**

Phase	What to do
Days 46–60	**Review what was escalated, what hazards were eliminated or reduced, where the process created friction and what should be revised before scale-up.**

How to measure whether the organization is moving upstream

Completion rates tell you whether procurement or project managers took the course. They do not tell you whether the organization is designing safer work. Better measures look at decision quality and control selection.

- Number of design or procurement changes escalated for safety review.
- Percentage of identified hazards eliminated or reduced through higher-level controls.
- Repeat incidents linked to the same design, equipment or planning weakness.
- Worker and maintenance feedback incorporated before implementation.
- Changes made to specifications after incident learning.
- Frequency of schedule, staffing or contractor-interface issues identified before work starts.
- Reduction in workarounds, temporary controls and recurring procedural exceptions.

Management of change is an upstream training opportunity

Organizations often have formal management-of-change processes for major engineering modifications but treat smaller operational changes as routine. New packaging, a different chemical supplier, revised staffing, a temporary bypass, a new customer requirement or a changed maintenance vendor can all alter risk. Upstream training should help non-safety functions recognize when a normal business change has safety implications.

A useful rule is that a change deserves review when it alters the energy, material, equipment, environment, sequence, staffing, competency or interface associated with the work. Decision-makers do not need to perform the risk assessment themselves. They need to know that the change has crossed the threshold where one is required.

Capital allocation is also hazard

allocation

Budget decisions determine which risks are removed and which remain dependent on procedures, maintenance and human performance. Deferring replacement of difficult-to-guard equipment may be financially necessary in some circumstances, but the decision should be made with a clear understanding of the residual exposure and the cost of maintaining lower-level controls.

Senior leaders therefore need a different kind of safety literacy. They should understand the hierarchy of controls well enough to distinguish an investment that removes recurring exposure from an expense that simply maintains the current system. NIOSH notes that higher-level controls can reduce ongoing protective actions, supplies and program maintenance and can support a long-term business case.

This does not mean every safety improvement automatically wins capital. It means the capital discussion should include the full operating burden of the hazard: training, inspection, PPE, supervision, downtime, maintenance, workarounds and the consequences of failure.

Contractor selection begins before contractor orientation

Organizations frequently invest heavily in contractor orientation after the contract is awarded. Upstream thinking starts earlier. Procurement and project teams can evaluate whether a contractor has the competencies, supervision, equipment and operating systems required for the work before price and schedule become the only practical decision variables.

Training for people who select contractors should include how to distinguish documentation from capability. A polished safety manual does not prove that the contractor understands the host’s critical risks. The selection process can ask about relevant experience, supervision ratios, incident learning, subcontractor controls, competency verification and how the contractor manages changes in scope.

By the time orientation begins, the organization should already have reasonable confidence that the contractor is capable of performing the work within the host’s safety expectations. Orientation then addresses site-specific conditions rather than trying to repair a weak selection decision.

Incentives can design the work as powerfully as equipment

An organization can unintentionally design risk through its performance measures. A supervisor measured almost exclusively on throughput will experience safety controls differently from a supervisor whose scorecard also reflects maintenance quality, planning discipline and verified control performance. A driver paid in a way that rewards speed can receive excellent defensive-driving

training while still operating inside a contradictory incentive system.

Upstream safety training for leaders should therefore include incentive design. What behaviour does the metric reward when conditions become difficult? What gets sacrificed first when the target is missed? Can an employee meet the commercial expectation and the safety expectation at the same time? If the answer is no, more frontline training will not resolve the conflict.

A real incident review should look upstream as well as downstream

Incident investigations often generate worker retraining because it is visible, quick and easy to document. A more mature review traces the event backward through the decisions that shaped the job. Was the equipment specified appropriately? Was the contractor selected for the work? Was the schedule realistic? Did a procurement substitution change the task? Did a customer commitment create an abnormal operating condition?

The purpose is not to distribute blame farther up the organization. It is to identify where prevention could have entered earlier. When an investigation repeatedly produces only frontline corrective actions, that pattern itself is worth challenging. The organization may be learning about individual behaviour while failing to learn about work design.

Where SafetyNow fits

Most learning platforms organize safety training around hazards and frontline roles. That remains necessary, but organizations can use the same learning infrastructure to reach the people who shape the work before exposure begins.

SafetyNow can support role-based learning for managers, supervisors, project teams and operational decision-makers, while organizations add their own procurement rules, change-management processes, engineering standards, contractor requirements and approval workflows. Custom content and instructor-led resources can turn internal lessons into decision scenarios that reflect the organization’s actual work.

The value is not simply more courses. It is a broader training architecture that recognizes two populations: the people who perform the work and the people whose decisions determine what that work will look like.

Move safety training upstream
SafetyNow can help organizations combine core safety learning with customized manager, supervisor and role-specific content so prevention reaches the people who design, purchase, schedule and manage the work. When safety learning reaches decision-makers earlier, organizations have more opportunities to remove risk before frontline employees have to manage it.
Explore SafetyNow training solutions

Train before the hazard reaches the worker

Frontline workers will always need high-quality safety training. They need to recognize hazards, follow procedures, make sound decisions and know when to stop. But organizations should be careful not to make frontline competence responsible for risks that could have been reduced earlier.

A mature safety system asks two questions after an exposure is identified. First, what does the worker need to know or do? Second, why does the worker have to manage this hazard at all?

The second question leads upstream, toward purchasing, engineering, scheduling, project management, customer commitments and organizational design. That is where many of the next gains in safety performance may be found.

> **The best-trained worker still deserves work that was designed with safety in mind.**