TRICAL'S FUTURE IN CALIFORNIA'S CHANGING REGULATORY LANDSCAPE

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Food Security vs. Sustainability

According to the Food and Agriculture Organization (2017), global food production needs to increase by an estimated 60% by 2050. The California Department of Food and Agriculture Statistics (2023) reported that the state's *'salad bowl'* provided over 33% of the United States' vegetables and 75% of its fruits and nuts (2023). Nonetheless, the California agricultural engine relied heavily on soil health. For the growers of high-value specialty crops such as strawberries and almonds, the presence of soil-borne pathogens could result in catastrophic yield losses of 20% to 50% if left untreated (Sustainable Pest Management Working Group 2023). As a premier distributor and applicator of soil fumigation products, TriCal, Inc. served as a critical infrastructure partner to California growers, providing the sophisticated chemical treatments and precision soil engineering essential to safeguarding the state's agricultural output.

The California Department of Pesticide Regulation (CDPR) released a strategic roadmap signaling an unprecedented intent to eliminate the use of *'high-risk'* pesticides by 2050.

The author developed the case for class discussion rather than to illustrate either effective or ineffective handling of the situation. The case and its accompanying instructor's manual were anonymously peer reviewed and accepted by the ***Journal of Case Research and Inquiry***, Vol. 11, 2026, a publication of the Western Casewriters Association. Qualified educators may request the instructor's manual at editor@jcri.org. Contact John Francis, Fowler College of Business, San Diego State University, 5500 Campanile Dr., San Diego, CA 921822, (619)594-5339, john.francis@sdsu.edu.

While not specifically defining what chemicals were to be considered *'high-risk,'* CDPR stated:

> *"Exposure to harmful pesticides carries risks to our health and to our environment and these risks are disproportionately borne by communities already overburdened by pollution. If we truly want to build a healthy and safe California for all, we must phase out and replace the highest-risk pesticides"* (States News Service, 2023).

The statement by the CDPR created a high-stakes strategic paradox for TriCal: as a vital element of agricultural productivity, the firm needed to navigate an environment where its core products might be defined as primary obstacles to public and environmental safety.

Soil fumigants, a category of pesticides, had been used by farmers since the 1950s for the elimination of destructive fungi, parasites, disease-causing pathogens, and weeds and had come under increasing social and regulatory pressure. While soil treatments using pesticides had led to the dramatic growth of California crop health and harvest yields, fears regarding impacts on soil health, worker safety and possible negative impacts to the environment had created a volatile political and regulatory environment. Specifically, key ingredients of TriCal fumigants such as 1,3-dichloropropene (1,3-D, brand name Telone) had been classified by the state as a Toxic Air Contaminant and a Proposition 65 carcinogen. Chloropicrin was a known potent respiratory and eye irritant, with reports of illnesses linked to wind drift into residential areas. These externalities were the primary justification for the CDPR's mission to phase out *'highest-risk pesticides'* through the Sustainable Pest Management (SPM) Roadmap.

For **Dean Storkan**, the 2nd generation CEO of family-owned TriCal, the difficulties of navigating the California regulatory environment had become increasingly challenging. TriCal, founded in 1961, got its start as a distributor and applicator of soil fumigation products focusing specifically on fruit, nut and vegetable growers in California. Its three founders, a chemical engineer, a plant pathologist, and an entomologist combined their specialized expertise on solving California's farming issues related to crop-killing pests and pathogens. With its climate and

water infrastructure, agriculture in the state had long been considered a farmer's paradise. TriCal, along with other industry players, continued to use technology, agronomy and engineering to develop advanced methods for crop protection and farm performance. Over the decades, TriCal's growth paralleled farm growth in California with the company now serving over 1,000 California growers.

With California's tightening pesticide regulations, the future of farming and its related sectors hung in the balance. As TriCal and Storkan approached the end of the fiscal year, the need for decisive action became critical. Despite the vagueness of the CDPR's phase-out timeline, Storkan knew the cost of waiting was strategically prohibitive. Scaling a credible alternative to fumigants required a minimum 18-month lead time for field testing and regulatory approval; not to mention that there was no effective existing chemical or biological substitute, in terms of aiding crop yields, available. TriCal risked being unable to supply its key customers in California. Across California, businesses increasingly turned to non-market strategies—efforts beyond traditional competition that involved political, social, and regulatory engagement to protect their interests. Was it now the time for TriCal and Storkan to explore these strategies, not just to adapt, but to actively shape the future of agricultural policy and secure the company's future?

TriCal's Role in California's Agricultural Engine

TriCal, Inc. was an agricultural technology (AgTech) company founded in 1961 by Richard Storkan, a chemical engineer working in pest control, Jerry Hanes, an entomologist (the scientific study of insects), and Robert McCaslin, a plant pathologist. Both McCaslin and Hanes had worked for the Los Angeles County Agricultural Commissioner's office. All three had first-hand exposure to the problems local farmers were having battling crop-killing pests and soil diseases. The three began to work on solutions to develop commercial applications for soil fumigation which had proved effective in treating diseases. They started with trial-and-error

hand-drilling soil procedures, evolving into more precise, specialized products methods that led to greater soil health, plant survival and harvest results.

A key aspect of enhancing their products lay in advancing chemical compounds that were effective in addressing soil issues. Many pesticides were applied topically, with the pesticide being sprayed, dusted, or dripped via irrigation on the plant or soil. TriCal's innovation lay in the pre-plant application process involved in underground soil treatment. For example, TriCal designed and experimented with tractors dragging 18+ inch, knife-like shanks digging under the soil to release the chemical treatment prior to planting crops. This led to increased safety and h became a standard practice throughout the industry. Another innovation largely credited to Richard Storkan and Dr. Stephen Wilhelm, a plant pathologist at the University of California, Berkeley, was the practice of using plastic tarping to cover soil as it was treated (see Exhibit 1). This practice, along with the underground release of the product made each soil application much more effective as the chemical compounds were directly applied to the diseased areas and contained there. In addition, the process of underground release and plastic tarping, along with advancements in personal protection equipment, made the application process safer for workers, bystanders and surrounding areas.

Exhibit 1. TriCal Application Innovation

Source: Adapted from TriCal archives 2024.

These advancements led to breakthroughs in California farmland productivity for soil health which had been plagued by diseases and pests such as pathogenic nematodes (destructive microscopic worms), plant wilts, root rots, weeds, and insects. Soil fumigation was credited with helping to bring California strawberry production back to farmland that had been labeled *"worn out"* (Olver and Zilberman 2022). The economic necessity of TriCal's services was best illustrated by the *'Yield Gap'* (see Exhibit 2), which revealed the catastrophic revenue losses farmers faced without effective soil treatment.

Exhibit 2. The "Yield Gap" Financial Impact

Source: Sustainable Pest Management Working Group 2023

Crop Type	Yield with Treatment (per acre)	Yield without Treatment (per acre)	Revenue Loss (%)
Strawberries	~65,000 lbs	~20,000 lbs	**-69%**
Fresh Tomatoes	~40 tons	~22 tons	**-45%**
Almond (New Orchard)	100% Tree Survival	65% Tree Survival	**-35%**
Carrots	35 tons	18 tons	**-48%**

As advancements in soil fumigation took place, TriCal became a leader in this segment, treating approximately 53,000 acres of California farmland in 2021. Headquartered in Hollister, California, TriCal established itself as the dominant force in the soil health industry, employing over 350 personnel across its distribution and application divisions (Dun & Bradstreet 2024). While the company remained privately held, industry analysts estimated that TriCal's annual revenues were between $150 million and $250 million (ZoomInfo 2024). The firm maintained a commanding 60% to 70% market share for soil fumigation services in California's high-value specialty crop regions (California Department of Pesticide Regulation [CDPR] 2024). TriCal was ranked the #1 soil fumigation specialist in the Western United States, supported by a specialized fleet of over 100 GPS-guided application rigs (California Air Resources Board 2024).

To achieve dominance, TriCal focused on providing support to specialty growers who were concerned with both the quality and the quantity of their crops. These types of crops are extensively scrutinized by customers based on the size, shape, color, firmness, and the absence of damage or blemishes. Producing healthy looking crops was particularly important to growers due to customer preferences. While TriCal considered itself a leader in research and development in the area of managing soil pests and pathogens, it also worked to find the safest approaches for the application of its products. Additionally, the firm was known for its long-

term trusted relationships with growers, working with many of them for over the past 50 years. One employee commented, *"I take great pride in being able to offer growers something very important and needed – we provide them something that not everyone can do."* TriCal developed into a vertically integrated chain of manufacturing, distribution, sales and application of soil fumigants that dominated the California market.

TriCal's Pivots from fumigation to Integrated Crop Solutions

From its core California business, TriCal grew into the TriCal Group (TCG) by adding 13 U.S. and 14 international companies. While TCG's operations were diverse, its primary business remained anchored by its fumigant manufacturing and application divisions, which maintained the soil fumigant chloropicrin as its most profitable product line. Another TCG business utilized the chloropicrin by-product, bleach, to develop products aimed at disinfecting industrial facilities, processing plants, and community pools. Further diversification turned TCG into a multi-segment service provider with a portfolio that included precision irrigation, nutrient management, and soil/plant diagnostics. With these moves, TriCal effectively captured the entire value chain of soil health—from diagnosis to treatment and irrigation. TCG also developed a state-of-the-art facility offering disease-resistant plant grafting. Additionally, with the company's expertise in engineering machinery, TCG diversified into the manufacturing of custom agricultural equipment. While these additional businesses were organized under the TriCal Group, they retained their regional identities and structures. Overall, TCG estimated that approximately 25% of its revenues came from California operations. Another large business unit, TriEst, also provided 25% of TCG revenues, focusing primarily on diagnosing crop issues and distributing fumigation products for farmers throughout the U.S. (excluding California and the Pacific Northwest). TCG's international businesses constituted roughly 10% of total sales for the group.

The Business of Agriculture

Agriculture remained one of the largest and most significant industries in the world to meet the needs of a growing population. Historical trends showed the dramatic rise in efficiency required of farmers: in 1930, one farmer was estimated to feed four people; in 2026, that number was over 155. To keep pace, global food demand was projected to increase between 35% and 56% by 2050 (van Dijk, Morley & Rau 2021). Rising demand has driven U.S. agricultural trade to record levels. The world's top supplier countries—including the U.S.—relied on extensive agricultural land, favorable trade policies, and the utilization of agricultural technologies to improve crop yields and stability (Tahir 2024). Reliance on high-productivity methods was the central economic foundation for companies like TriCal. For California, agriculture had long been an important industry in the state with an estimated market value of $59 billion top among U.S. states (California Department of Food and Agriculture 2023). The state had over 68,000 farms and accounted for 4% of total U.S. farming production. California farms were typically small with 70% having fewer than 100 acres, yet producing over 400 different agricultural products, including almost 75% of the nation's fruits and nuts (USDA 2025). With its diverse growing conditions only found in certain regions, California was critical to the nation's food supply by producing the vast majority of all crops in several categories (see Exhibit 3).

California agriculture was not only a vital contributor to the U.S. food industry but also exported over $23 billion worth of products internationally, an increase of 4.4% from the previous year (CA Agricultural Exports 2022-2023). However, based on the size of farming regions, California was extremely effective in land usage and was the location for some of the most valuable farmland in the U.S. (see Exhibit 4). A recent trend regarding agriculture had been the increased price of food and produce. Due to inflation that affected food and specialty crops over the past few years, California consumers had grown sensitive to increases in price. While the state has seen a slowdown in inflation, Sarah Bohn, economist and director of the Public Policy Institute of California Economic Policy Center, suggested that while this *"is great news,*

it's not like those prices are declining," and that *"when you go to the grocery store, your total bill is still much higher overall than a few years ago"* (Sumagaysay 2024).

Comparing the prices of organic crops to conventionally grown crops, increases were even more pronounced. For example, the USDA estimated that for the period of 2018 to 2022, organic strawberries were priced 74% to 88% higher than conventional strawberries even with domestic organic strawberry acreage tripling in California (USDA Specialty Crops Resources 2023).

Exhibit 3. California's Rank in the Production of Specialty Crop Categories

Source: Adapted from California Agricultural Resource Reports 2023

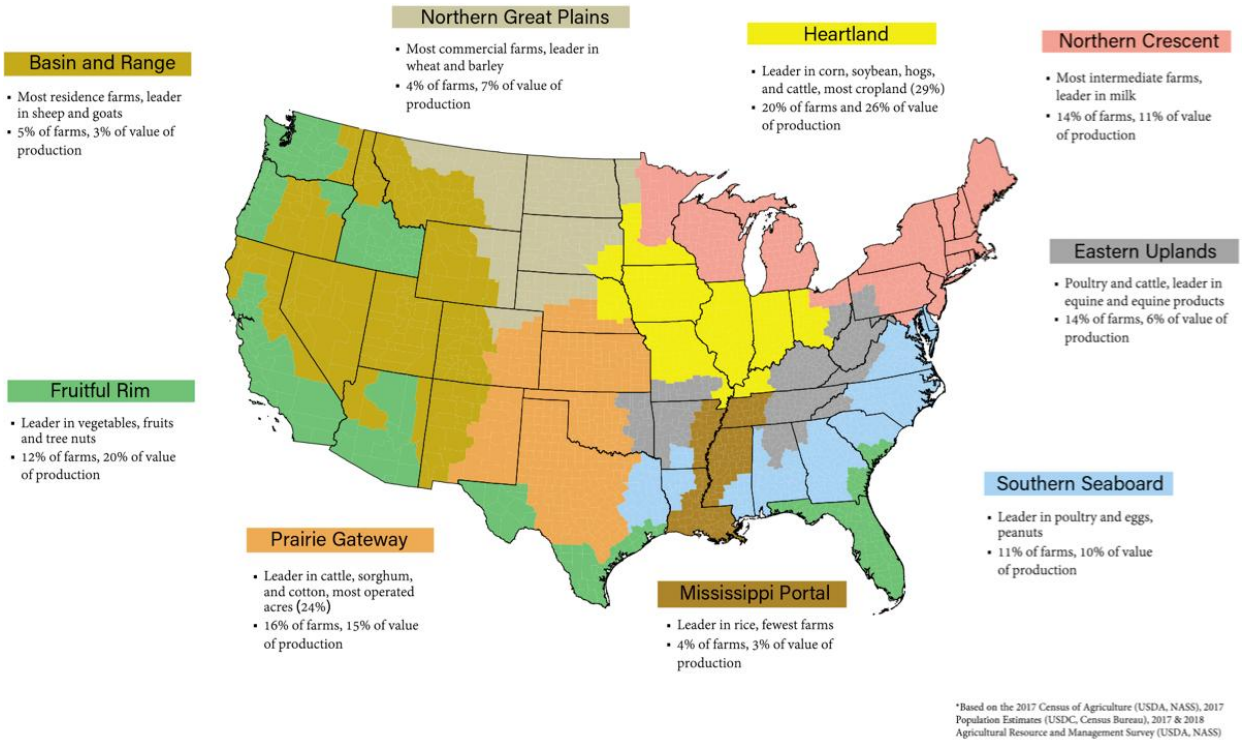
Crop and Livestock Commodities in which California Leads the Nation [1]			
Almonds	Flowers, Bulbs	Mandarins & Mandarin Hybrids [2]	**Plums, Dried**
Apricots	Flowers, Cut	Melons, Cantaloupe	Pluots
Artichokes	Flowers, Potted Plants	**Melons, Honeydew**	Pomegranates
Avocados	**Garlic**	Dairy products, Milk	Raspberries
Beans, Dry Lima	Grapefruit	**Nectarines**	Rice, Sweet
Blueberries	**Grapes, Raisins**	Nursery, Bedding Plants	Safflower
Broccoli	Grapes, Table	Nursery Crops	Seed, Alfalfa
Brussels Sprouts	Grapes, Wine	**Olives**	Seed, Bermuda Grass
Cabbage	Hay, Alfalfa	Onions, Green	Seed, Vegetable and Flower
Carrots, Fresh	Herbs	Oranges	Spinach
Carrots, Processing	Jojoba	Parsley	Squash
Cauliflower	Kale	**Peaches, Clingstone**	Strawberries
Celery	**Kiwifruit**	Peaches, Freestone	Tomatoes, Processing
Cotton, American Pima	Kumquats	Peppers, Bell	Triticale
Daikon	Lemons	Peppers, Chili	Vegetables, Greenhouse
Dates	Lettuce, Head	Persimmons	Vegetables, Oriental
Eggplant	Lettuce, Leaf	Pigeons and Squabs	**Walnuts**
Escarole/Endive	Lettuce, Romaine	**Pistachios**	Watercress
Figs	Limes	**Plums**	

[1] *California is the sole producer (99 percent or more) of the commodities in* ***bold*** *.*

[2] *Includes tangelos, tangerines, and tangors.*

Exhibit 4. Cross state comparisons of crops and crop value

Source: USDA/NASS 2022



The Technology of Agriculture

Scientific advances increasing the productivity of agriculture and farm crop yields had allowed farmers to produce more with less as the U.S. and global population had grown while the number of farms decreased. The USDA 5-year Agriculture Census indicated that the number of farms declined nationally by 141,733 and California by 7,387 in the period between 2017 and 2022 (Report on 2022 Agriculture Census 2024). Soil fumigation had long been considered the primary method for growers of specialty crops to improve crop yields and quality. Pests and pathogens were unavoidable and wreaked havoc on these kinds of crops, costing California up to $6 billion per year in crop loss (University of California, Riverside Center for Invasive Species Research n.d.). As such, IBISWorld (2024) estimated that pesticide manufacturing in the U.S. would remain strong at approximately $18.5 billion in revenue.

As an example of soil fumigation's importance, the University of California Cooperative Extension (UCCE) conducted two studies on farms with conventionally treated soil and organic farms (Bolda et al. 2022; Tourte et al. 2022). The two reports indicated that organic yields for strawberries were significantly lower than conventional farms that utilized fertilizer and fumigation (for illustration see Exhibit 5).

Exhibit 5. Strawberries treated and untreated comparison

Source: TriCal archives 2024

Based on study estimates, if California farms were not able to utilize conventional farm practices, 48 million fewer people per week would have access to fresh strawberries. Additionally, based on the UCCE per acre assumptions for yields and resource utilization, it was calculated that converting all strawberry acres to 100% organic, and maintaining current total production levels, California would need:

- 9,714 additional acres devoted to strawberries;
- 5.4 billion additional gallons of potable water;

- 3.33 million additional gallons of diesel;
- 1.72 million additional gallons of gasoline;
- 3-18 million additional pounds of agricultural plastics (organics cannot use biodegradable films);
- 1.6 billion additional pounds of organic fertilizers;

Additional material inputs to support organic-only production would generate an additional 49.3 million pounds of greenhouse gasses (carbon dioxide equivalents) per year.

Organic farming provided one alternative, but it was distinct from the emerging movement of Regenerative Agriculture (RA). While *'Organic'* was a strictly regulated USDA production standard defined by the absence of synthetic inputs, RA was an outcome-based philosophy focused on restoring soil health through practices like cover cropping, composting, and reduced tillage (Rhodes 2017). A tension existed here: many organic growers relied on heavy tillage to manage weeds without herbicides, which could inadvertently disrupt soil biology and release stored carbon. In contrast, RA prioritized minimal soil disturbance to sequester carbon and improve the water cycle. For California's specialty crop sectors, both models faced a harsh *'Yield Gap.'* Research indicated that moving to purely regenerative or organic systems without soil fumigation could result in a 25% to 50% drop in yield for crops like strawberries and almonds due to the resurgence of aggressive soil-borne pathogens (Bolda et al. 2022). Furthermore, maintaining current production levels under an organic or regenerative-only model would require an estimated 9,714 additional acres of land, increasing water consumption by 5.4 billion gallons annually (Alliance for Food and Farming 2023).

Given the growing need for food both in the U.S. and globally, even though farms were experimenting with both organic and RA alternatives, overall the increased demand for crops had continued to result in continued increases in the use of soil fumigation (Agricultural Soil Fumigants Market) and fertilization (Fertilizer - Statistics & Facts 2024).

Other AgTech innovations included precision agriculture such as the use of GPS technology, drones, and IoT (Internet of Things) devices to monitor and manage crops, water, fertilizers and pesticides more precisely. Additionally, artificial intelligence, the use of big data to analyze weather patterns, soil conditions, and crop performance, and robotics were being applied to increase farm effectiveness. Another area of innovation included biotech development of crops that were more resistant to pests, diseases, and extreme weather conditions. Lastly, there were technologies focused on sustainable farming practices, such as no-till farming, crop rotation, and integrated pest management such as the use of biopesticides which were derived from natural materials. Many of these practices focused on sustainability and did not deliver the effectiveness of current farm solutions. Therefore, continued innovation in agricultural technology to improve agricultural productivity and sustainability remained an elusive goal.

While all farmers wanted to increase their agricultural productivity, how they went about it varied greatly based on country or region. In the U.S. or Western Europe, there was very little wasted land, infrastructure was well-developed with farmers leveraging the benefits of soil fumigation and fertilization (Investopedia 2023). In other regions such as Africa and much of South Asia, the lack of infrastructure created problems in transporting crops or other tools such as fertilizer causing farms to be less effective (Investopedia 2023).

Regulatory Pressure and the Ticking Clock

While there had been an increase in the need for fertilizer and fumigation to meet growing food demands, governments faced mounting pressures to regulate the use of these chemicals and ensure that they were applied in ways that protected both human health and the environment. In the U.S., the primary governing entity for agriculture science, including the use of chemicals, was the U.S. Environmental Protection Agency (EPA). In addition, California had developed its own regulators including Cal/EPA, CDPR and other related California agencies such as the California Department of Food and Agriculture (CDFA) and County Agricultural

Commissioner Offices (CACs). These agencies created an additional layer of regulatory control and oversight under which California growers and AgTech businesses operated.

The CDPR (California Department of Pesticide Regulation) began championing an Integrated Pest Management (IPM) system actively in the 1990s, recognizing the need for sustainable pest control practices in response to concerns about the environmental and health impacts of chemical pesticides (Flint, 2003). IPM was defined as

> *"a pest management strategy that focused on long-term prevention or suppression of pest problems with minimum impact on human health, the environment, and nontarget organisms. Preferred pest management techniques include encouraging naturally occurring biological control; using alternate plant species or varieties that resist pests; selecting pesticides with a lower toxicity to humans or nontarget organisms; adopting cultivating, pruning, fertilizing, or irrigation practices that reduce pest problems; and changing the habitat to make it incompatible with pest development. Pesticides are used as a last resort when careful monitoring indicates that they are needed according to pre-established guidelines. When treatments are necessary, the least toxic and most target-specific pesticides are chosen"* (Flint 2003).

California's efforts led to impressive results. In the CDPR's most recent study on pesticide residues based on 3,281 produce samples collected from 500+ California businesses reported the following key findings:

- 97% of fresh produce tested had no detectable pesticide residues or had residues below health-protective thresholds set by the federal government.
- 37% of all samples collected had no detectable pesticide residues, while another 60% had residues below federal benchmarks. Just 3% of all samples had illegal residue levels.
- Only 1% of domestically grown produce sampled and tested contained illegal residues.
- No illegal residues were found on 78 types of produce tested, including highly consumed products like avocados and apples.
- Of the illegal residues found, 82% were on imported produce (California Pesticide Residue Monitoring Annual Report 2022).

The soil fumigant primarily utilized by TriCal, chloropicrin, had become a leading choice by farmers, after methyl bromide was banned by the U.S. EPA in 2017 due to its impact on depleting ozone (Guthman 2018). While Chloropicrin was a hazardous or noxious liquid, it was considered safer for the environment and humans if applied under strict guidelines. Chloropicrin also had the advantage over other topical pesticides because it decomposed in the soil and had a half-life of approximately 20 days (Chloropricrinfacts.org).

The EPA provided direction for safe applications by requiring no direct exposure to reduce skin, eye and lung irritations. Also, the procedure for each soil treatment was extensive, requiring licensed Pest Control Advisors (PCA) to provide growers with written recommendations addressing thirteen impact areas. To conduct a chloropicrin application, the PCA needed to (1) obtain a restricted materials permit, (2) file a notice of intent (NOI) to apply a restricted material, and (3) complete a fumigation management plan (FMP) detailing everything from soil conditions and application method to buffer zone information and emergency preparedness plan to air monitoring and surrounding area notification. Finally, the PCA completed the Post Application Summary (PAS) and submitted a Pesticide Use Report to the county.

PCAs were college educated in Crop Health, Pest Management Systems and Methods, Crop Production Systems, and Physical and Biological Sciences with at least 24 months applicable field work experience and 40 hours of continuing education every two years. All applicators and handlers had to certify completion and fit-test of Personal Protective Equipment (PPE) and respirator training. Personnel needed to comply with federal and state Worker Protection Standards (WPS), Good Agricultural Practices (GAPs), and with federal, state, and county stipulations pertaining to labels and other regulations. Based on these strict requirements, TriCal estimated that a sensory irritation caused by direct exposure to the fumigant via a leak, application error, or extreme weather condition occurred once every ~6,000 applications, or 0.018% of the time it was utilized (US EPA 2008).

More recently, the CDPR had released what it called its *"Strategic Pest Management (SPM) Roadmap,"* which a set of initiatives designed to promote even safer, more sustainable pest management practices across California. The goal was to reduce the risks associated with pesticide use, minimize environmental impact, and protect human health while managing pest populations effectively. The program emphasized various control methods with a focus on minimizing reliance on chemical pesticides. Key components included:

1. **Integrated Pest Management (IPM)** encouraged the adoption of past IPM principles aiming to focus on prevention, monitoring, and control methods.
2. **Pesticide Use Reduction** reduced the overall use of high-risk pesticides.
3. **Pesticide Regulation and Safety** enforced regulations to ensure safe and proper use.
4. **Education and Outreach** educated pest management professionals, farmers, landscapers, and the public on the benefits and practices of IPM.
5. **Research and Innovation** supported research into new, safer pest management techniques and alternative pest control methods, such as biological control agents, organic solutions, and advanced technologies.
6. **Environmental and Health Impact Assessments** assessed the risks and impacts of pesticides on human health, wildlife, and the environment. CDPR evaluated and monitored pesticides and pest management practices to ensure they meet safety standards and to identify opportunities for improvement.
7. **Collaboration with Other Agencies.** The CDPR worked closely with other state and federal agencies, universities, agricultural organizations, and environmental groups to coordinate efforts on pest management issues, promote best practices, and develop policy solutions (California Department of Pesticide Regulation)

To accomplish its new mission, the CDPR maintained a staff of about 390 individuals and an annual budget of approximately $91 million. As part of the Governor's proposed budget for the 2024-25 fiscal year, the agency had asked for an additional 117 positions and $25 million annually by raising sales taxes to 35% on pesticides to farmers (California Department of

Finance 2024). The CDPR also sought approval for the ability to impose additional future sales tax increases. These proposals signaled that the CDPR was ramping up for a major push toward implementing the new Strategic Pest Management (SPM) program. SPM was defined as *"a holistic, whole-system approach to managing pests in agricultural and other managed ecosystems and urban and rural communities that builds on the concept of IPM with broader consideration of human health and social equity, environmental protections and economic vitality."* The expectation was that the CDPR would determine which pesticides would be reduced or eliminated and determine what human health and environmental impacts would be measured.

Nongovernmental Organizations and the Media

Beyond the governmental agencies, NGOs were also actively involved in influencing politicians and advocating for stricter regulation in California. Organizations such as the Environmental Working Group (EWG) and Pesticide Action Network (PAN) worked to create policy changes by raising awareness and supporting research. These groups pushed for transparency in food labeling and highlighted pesticides' environmental impact on soil, water, and biodiversity. Additionally, the media, including traditional news outlets, social media platforms, and digital media and blogs were involved as well, amplifying concerns, informing the public about health risks from pesticide residues in food and environmental impacts. These platforms shaped public opinion by reporting on issues related to pesticide use, offering commentary, and highlighted the broader social, environmental, and health impacts.

At the Crossroad: Architecting TriCal's Next Move

TriCal worked hard to meet the regulatory requirements of the various regulatory agencies that provided oversight. It continued to invest in R&D safety and impact testing, conducted hundreds of field trials to meet standards and labeling approvals set by the U.S. EPA along with the additional regulations required by the state of California. It safely transported its products

from its manufacturing plant in North Carolina to mixing facilities and storage locations throughout California. In addition, it had developed an extensive pool of qualified licensed applicators and Pest Control Advisors.

The launch of the new SPM Roadmap presented a fresh set of challenges for TriCal's future.

As Dean Storkan reviewed his options, he recognized three potential regulatory shocks looming on the horizon: a total regulatory ban on chloropicrin, higher environmental mitigation taxes, or a doubling of required buffer zones that would effectively render thousands of acres untreatable. The urgency of this transition was underscored by the rapidly shifting economic landscape. Over the past decade, TriCal had faced a 300% increase in regulatory compliance costs, while the number of approved active ingredients in their portfolio continued to shrink (see Appendix 1). For Storkan, this raised questions about the long-term financial viability of a business model within a tightening regulatory environment.

Storkan recognized that the enactment of potential regulations would pose a serious threat to his company. He realized that TriCal could no longer afford to be a passive observer of increasing regulation. Instead, he had to decide: Should TriCal double down on its technological advantages and proven safety, leading a cross-industry coalition to protect food security, or pivot its business model toward other non-chemical alternatives? Storkan realized that this moment represented an opportunity to engage with decision-makers and address potential misinformation surrounding TriCal's products. With the 2050 SPM Roadmap deadline set, Storkan had to architect a non-market strategy that would determine if TriCal remained a chemical distributor or evolved into a broader agricultural solutions partner. The clock was ticking.

APPENDIX 1. Regulatory Compliance & Market Trends

Source: Data synthesized from California Department of Pesticide Regulation (2025) Pesticide Use Reports; Hamilton & McCullough (2024) Cal Poly Regulatory Compliance Study; and AgbioInvestor (2024) Agrochemical Product Study.

Regulatory Metric	10 – Year Trend	Impact on TriCal
Pesticide Use Restrictions	+45% Increase	Higher operational complexity
Product Registration Time	Up to 10 Years	Slower innovation cycle
Compliance Costs	300% Increase	Margin compression
2050 SPM Roadmap Goal	100% Phase-out	Complete business model threat

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