Creating a Comprehensive Occupational Safety and Health Regulation for Armenia: Priorities and International Practice

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Introduction

As mandated in the Labor Code of Armenia, issues of occupational safety and health are due to be regulated by the Ministry of Labor and Social Issues (MLSI) in 2008, with the State Labor Inspectorate enforcing these regulations through employer consultation and regular inspections. However, at present in Armenia, the regulatory framework for occupational safety and health (OSH) is either (depending on the specific industry) reliant on outdated Soviet regulations or it is non-existent. Public awareness of safety issues is also low, and knowledge on the actual extent of safety hazards and risks is local and decentralized (and even then, not all workplaces have a sufficient idea of the risks that workers face).

In tandem with the obligation to regulate health and safety, and with the Ministry's desire to improve worker safety in the country, there is also a governmental desire to move Armenian legislation closer to the European Union (EU). Like many developed economies, the EU has developed its own body of regulations regarding occupational safety, some of which are applicable to Armenia today, while others are clearly beyond the country's needs. Defining which regulatory instruments and priorities are necessary for moving closer to EU law and that are also applicable for Armenia's economy will form another challenge for the Ministry in protecting worker safety.

The purpose of this note is to assist in designing OSH regulation for Armenia that will both satisfy the need to address safety issues in the country today as well as to approximate EU standards. Most importantly, this note will lay out a methodology for prioritizing regulations in this sphere and suggest mechanisms for the MLSI to design a comprehensive regulation that best ensures safety for the country's workers.

Types of Regulations: Approach and Scope

Designing an OSH regulation comes down to two crucial criteria: approach and scope. Approach refers to the method that companies are regulated and how laws should be written. There currently are two different types of regulations in place in the field of OSH, each with advantages and disadvantages: specification standards and performance standards.

Specification Standards

Specification standards were prevalent in the early 1970s, when most modern OSH regulations were being developed, and set out detailed and specific processes for industries, including mandating equipment, positioning of signs, and setting penalties if these government-mandated procedures were not followed. This command and control approach appeared to be an effective way to regulate occupational safety and health (among other disciplines; specification standards are heavily utilized in environmental protection and other regulatory areas) in an environment where knowledge of safety was low and for the most part unexplored. However, this type of

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standard has since fallen out of favor, as a number of deleterious effects came about from their implementation: first, the costs borne by industries increased dramatically as they were charged with stamping out any incidence of risk; secondly and perhaps more importantly, specification standards removed any incentives for industries to improve safety on their own, as any deviation from the official government-proscribed procedures or equipment could bring penalties. These regulations essentially removed the responsibility for safety from the employer, as any accidents that did occur could be blamed on lax government regulations instead of on the circumstances of the accident. While specification standards are still in use today, there has been a move away from their adoption in favor of other types of regulation.

Performance Standards

The current international best practice is a "performance standard," typified by the EU's "new approach" directives: In the words of the EU, "Application of harmonized standards or other technical specifications remains voluntary, and manufacturers are free to choose any technical solution that provides compliance with the essential requirements."[1] These standards do not mandate specific equipment or processes, but rather set broader goals or technical limits and allow businesses the flexibility to achieve them.

Box 1 – An Example of Performance Standards

Standards for a temporary shelter in a long road-transport tunnel provide an example of the approach that performance standards take as opposed to specification standards. These tunnel shelters, provided at suitable intervals along a tunnel's length, are where people can take temporary refuge in case of a fire in a tunnel. One of the main requirements of these shelters is that they should be able to sustain a person's life for a predetermined period of time—say, a one-hour period—by maintaining integrity against the effects of fire and explosion—heat, smoke, toxic and flammable gases— that might surround the shelter. The performance standards, therefore might encompass these features:

- The internal concentration of flammable gas will not be greater than a set amount determined by the Ministry.
- The internal concentration of carbon monoxide (resulting from a fire) will not exceed 500 parts per million (ppm).
- The internal air temperature will not rise above 50° C (122° F).
- The visibility will not fall below 10 m (33 feet).
- The frequency of impairment of the shelter will not be greater than 10-3 per year.

Source: Baldev Kandola, "Performance Standards in Safety Risk Management," available on-line at: http://www.pbworld.com/services/homeland_security/downloads/performance_standards.pdf.

While many benefits accrue from performance standards such as the "new approach," not least of all that it allows companies to choose their own path to safety, so long as the outcomes are achieved, it also saves resources in smaller and poorer countries, which may not be able to make the leap to modernity in one fell swoop. In the first instance, command and control standards may crush fledgling industries by mandating equipment that is either too expensive or impossible

[1] European Union, Guide to the Implementation of Directives Based on New Approach and Global Approach, Introduction, available on-line at http://ec.europa.eu/enterprise/newapproach/legislation/guide/document/introduction.pdf.

to acquire. Secondly, and even more relevant for the MLSI, is that command and control standards require a highly efficient and very expansive enforcement mechanism (or an atmosphere of compliance). The reality is that, in order to protect safety outcomes, it is pointless to institute a larger OSH regulation that tackles all problems if it cannot be enforced, and many developing countries do not (and should not) have the governmental resources to regulate everything. For these reasons, specification standards are not advised for Armenia, and performance standards are.

With these guiding standards in place, many executive agencies across the world have built primary and secondary regulations to help protect safety and improve outcomes at work.

Scope of the Regulation I: Who to Regulate?

The entire rationale for regulating occupational safety and health is that there are risks in the workplace that can be avoided through prudent policies, and for some reason (whether negligence, lack of knowledge, or something else), employers have not provided adequate safeguards against these risks. However, just because there may be a need at one point in time for government to set the framework for occupation safety and health, this does not mean that there should be micromanagement of business processes, nor should there be blanket policies that treat every firm in the same manner. Indeed, occupational safety and health regulation should be approached in the same manner as every other proposed regulation: on the basis of their benefits to society (reducing risk) and the costs incurred in their implementation (borne by businesses). In the words of Harvard economist W. Kip Viscusi, "The potential role of the government is **not** to eliminate the risk...the task of government regulatory agencies is to identify cases in which regulation can generate more benefits to society than the costs that are incurred… using a cost-effective approach."[2]

With any regulation, benefits to society are seen more easily than costs, and this is no exception in the case of OSH regulation. The purpose for and benefits of OSH regulation can be seen in both the aggregate, with lives saved and injuries avoided, and at the microeconomic level, with businesses running smoothly and no loss of workdays. Thus, the goal for the MLSI in Armenia is to design an appropriate regulation that maximizes these benefits, prioritizing areas to be covered by the effect that they have in reaching the goals of greater safety. Currently, there are three separate methods that a government can utilize to regulate in the sphere of OSH in an attempt to maximize societal benefits:

1. Regulation by Risk Existence
2. Regulation by Labor Distribution
3. Regulation by Risk Distribution

These metrics, and their strengths and weaknesses, are discussed below.

Regulation by Risk Existence

The first method that many countries utilized at the inception of OSH regulation in the 1970s focused on attempting to eliminate as many risks as possible. The benefit calculation of these

[2] W. Kip Viscui and Ted Gayer, "Safety at Any Price?" *Regulation*, Fall 2002.

standards were simple, as the existence of any health and safety risk would have possible repercussions for workers and the economy, and thus any attempt to remove these risks would lead to an improvement. The regulations were designed, in theory, to give bureaucrats leeway to respond to threats to safety as they were identified, all while pursuing the noble goal of the safest workplace possible.

Box 2- An Example of Areas for Regulation by Risk Existence

Potential risky areas can include air contaminants, and chemical, biological, physical, and ergonomic hazards.

AIR CONTAMINANTS

- These are commonly classified as either particulate or gas and vapor contaminants. The most common particulate contaminants include dusts, fumes, mists, aerosols, and fibers.

CHEMICAL HAZARDS

- Harmful chemical compounds in the form of solids, liquids, gases, mists, dusts, fumes, and vapors exert toxic effects by inhalation (breathing), absorption (through direct contact with the skin), or ingestion (eating or drinking). Airborne chemical hazards exist as concentrations of mists, vapors, gases, fumes, or solids.

BIOLOGICAL HAZARDS

- These include bacteria, viruses, fungi, and other living organisms that can cause acute and chronic infections by entering the body either directly or through breaks in the skin. Occupations that deal with plants or animals or their products or with food and food processing may expose workers to biological hazards.

PHYSICAL HAZARDS

- These include excessive levels of ionizing and nonionizing electromagnetic radiation, noise, vibration, illumination, and temperature.

ERGONOMIC HAZARDS

- The science of ergonomics studies and evaluates a full range of tasks including, but not limited to, lifting, holding, pushing, walking, and reaching.

However, in practice, the open-ended mandate to prosecute all risks gave no guidance to prioritizing OSH regulations, and the regulatory process became susceptible to overreach. In the United States, additionally, development of secondary regulations became driven by the media and popular scares rather than by any sober analysis of risk (with high-profile hazards being pushed over more mundane regulations that could have protected more people). Finally, the major problem of risk existence regulation was that, in reality, the only way to regulate risks out of existence was to tell companies exactly how to run their business via specification standards. The challenge of developing specific standards to stamp out risk became even more difficult when standards started to collide, as the elimination of some risks led to still others. In sum, a different method that prioritized regulations was needed.

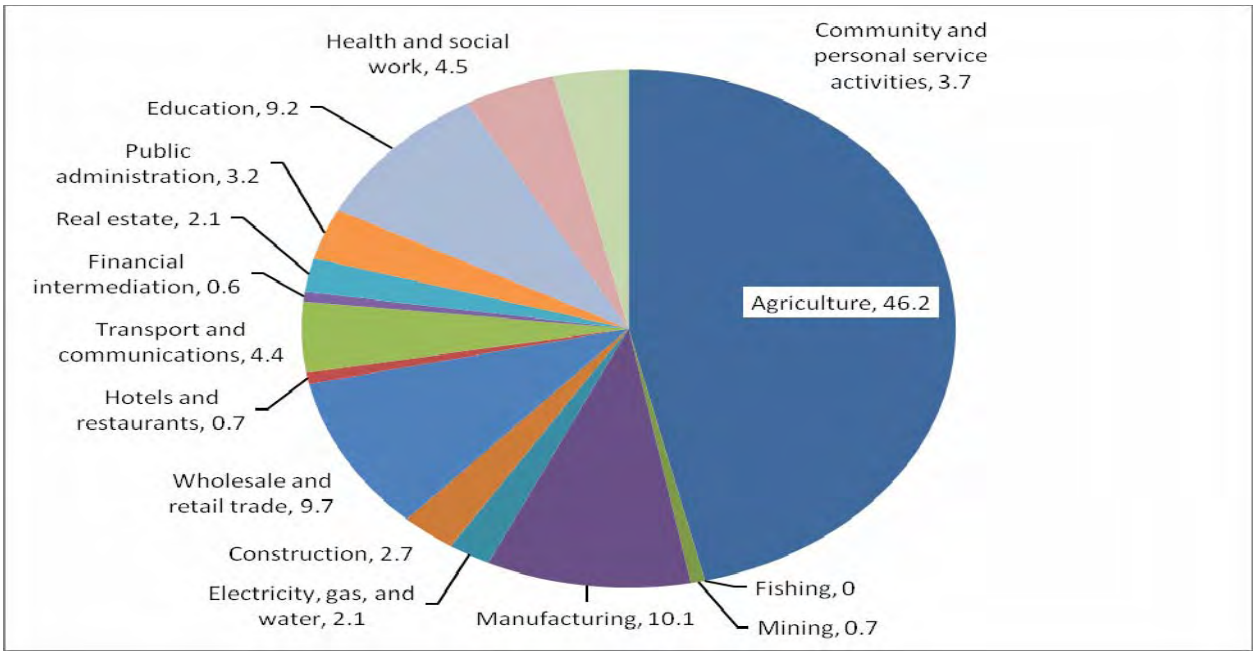
Regulation by Labor Distribution

The shortcomings of risk existence regulation leads to the idea that better regulation must quantify the distribution of the benefits of regulation in the occupational health and safety

sphere, rather than focus on broader risk reduction. One of the most effective ways to measure this benefit distribution would be to identify where the bulk of workers were located in a national economy and then tailor regulations and normatives to these industries almost exclusively. In this manner, the greatest number of workers would be covered by safety regulations, and the bodies charged with enforcement (usually the Labor Inspectorate) could narrow their focus to these industries (and away from other industries that may only employ a few thousand people). The Ministry responsible for safety could decide the cut-off point for regulations; for example, a decision may be made that only industries that employed at least 5% of the total workforce of a country would be subject to regulation. Under this threshold of 5%, industries would be left relatively alone, excepting, of course, for accidents and complaints that were registered through the Labor Inspectorate.

The relative simplicity of this framework means that it can utilized quickly in Armenia to determine the MLSI's program of minimum OSH regulations. Figure 1 shows the current distribution of labor among industries and sectors in Armenia, as catalogued by the National Statistical Service (NSS), the distribution that would be the basis for prioritizing regulations. As this Figure shows, the overwhelming number of workers in the Armenian economy are in the agricultural sector, followed by manufacturing, wholesale and retail trade, and then education, health and social work, and transport and communications. As noted above, the exact threshold at where regulations would take effect would be created by the MLSI, but 4% of the workforce could be a reasonable cut-off point for Armenia, as this would allow the regulations to encompass 84% of the registered labor force in the country.

Figure 1: Distribution of the Armenian workforce, 2006



Having identified the largest industries in the country, the next step would be to set regulatory standards in these fields, based on the specific issues facing these industries. Further break-down of these industries would most likely be necessary in order to examine the specific risks that exist

(such as, under agriculture, the difference between small and large farms, and the difference between viticulture and commercial farming). Thus, a sample regulation may appear like this:

I. General Principles of OSH regulation
II. Industries
    a. Agriculture
        i. Workplace
        ii. Work equipment
    b. Manufacturing
        i. Workplace
        ii. Work equipment
    c. Wholesale and retail trade
        i. Workplace
        ii. Work equipment
    d. Health and social work
        i. Workplace
        ii. Work equipment
    e. Transport and communications
        i. Workplace
        ii. Work equipment
III. Transition period/Implementation
IV. Schedules for each industry (including signs)

The benefits of the labor distribution approach are apparent: labor force data is already collected by the NSS, and determining the current distribution of labor would be simple. Once this is finished, the MLSI can focus exclusively on these industries, and tailor regulation much more than under the "regulation by risk existence" approach. However, this approach also has several drawbacks that may make it unusable. In the first instance, this approach casts a very broad net without consideration of risk, and thus may lead to regulations on industries that are performing at a very safe level already (or that have little need for regulation in the first place). Under such a scenario in, for example, wholesale and retail trade, additional regulations would only increase the burden on businesses without increasing safety levels. Secondly, regulation by labor distribution only takes into account the workers in Armenia as of today, without making any allowances for how the Armenian economy may shift in the future. Such an approach would need to continually update regulations, while making sure that older regulations that are still necessary are overseen and those that are not necessary are discarded (and it is a truism that government regulations are almost never repealed). Finally, this approach ignores market forces and feedback effects: if the government increases regulation in a certain industry, it may force enough people on the margin out of the industry and into others, thus changing the labor distribution (and the regulations necessary). Regulation does not occur in a vacuum and may have unintended consequences.

Regulation by Risk Distribution

As noted above, simply targeting industries with many workers may not result in higher safety if workers in the industry are not at risk any way: that is, there is no reason to take into account the *possibility* of injury in an occupation where the *probability* is exceedingly low. A final, and recommended, way to measure regulatory impact would thus be to focus on risk probabilities as

the guideline for creating a series of OSH regulations. Under this framework, the industries with the largest number of workers *and* the highest risk of injury would come under regulation, with other industries lightly or not regulated at all. Such a system of regulation would take into account actual, on-the-ground issues facing Armenian workers, while allowing flexibility to tailor regulations to specific threats.

To utilize the weighted risk framework, we could plausibly determine risk probability through the actual occurrence of accidents by industry. In particular, a disproportionate number of accidents in an industry with low numbers of workers points out how dangerous such an industry can be. Other metrics can be utilized to rank risk in Armenia, including:

- Does this industry involve the use of hazardous materials?
- Does this industry utilize high-risk processes that require specialized training?
- Is this industry recognized as high-risk internationally?
- Has this industry already been designated as hazardous by the government of Armenia, i.e. through the use of privileged pensions?

The exact metric utilized to classify an industry as risky will of course necessitate the collection of data by the Labor Inspectorate, or utilization of data that is collected elsewhere in the government (such as with SMEC and the NSS), and increased data collection can help to refine both the legislative framework and the enforcement of the laws. Basic data already collected by the government of Armenia, however, can be utilized to perform a crude risk ranking: in particular, the NSS in their "Social Conditions of Armenia" document show the breakdown of injuries by Marz. While at first glance not helpful, the statistics contained therein can help us to identify risk. In particular, as Table 1 shows, 50% of all injuries in Armenia in 2006 occurred in the Syunik region, where a mere 4.7% of Armenia's population (and 5.3% of its labor force) reside. However, Syunik's economy is overwhelmingly dependent on mining (91% of all output in the mining sector comes from Syunik, and 85% of all output in Syunik comes from mining), leading us to conclude that mining is probably the riskiest industry in Armenia today (this comports with international practice).

Table 1: The Distribution of Industrial Accidents and Injuries across Marzes, 2006

	The number of accidents, units	The number of injured, persons	From which fatalities are:
Yerevan	22	24	6
Aragatsotn	-	-	-
Ararat	9	9	1
Armavir	1	1	1
Gegharqunik	1	1	1
Lori	4	8	1
Kotayk	6	6	-
Shirak	-	-	-
Syunik	50	50	6
Vayots Dzor	1	1	1
Tavush	-	-	-
Total RoA	94	100	17

Source: National Statistical Service of Armenia, "Social Conditions in Armenia"

In one sense, Armenia already has a risk ranking, categorizing risks such as exposure to pollutants, explosive atmospheres, and vibration, and showing the proportion of workers in broad industrial categories that are exposed to these risks (see Table 2). This too can serve as a preliminary indication of where regulations need to be targeted at present. Under this analysis, and although the headings are far too broad, we can see that workers in mining are exposed to some of the most dangerous risks, in fact making up a disproportionate amount of those exposed to these risks.

Box 3 – The International Focus on High Risk Industries and Factors

The Australian National Strategy on OSH makes the reduction of high incidence/severity risks the first priority in its ten-year national program, recognizing that, by targeting hazards, injuries, industries and occupations where the incidence of injury and fatal accidents is particularly high, a significant improvement can be made in OSH performance.

This emphasis on high-risk industries is reflected in other national programs. Japan's five-year plan considers particularly the issues which arise in promoting the prevention of accidents in construction (which accounts for nearly 40 per cent of all fatal accidents), manufacturing, and land freight transportation. Malaysia intends to focus special program and new approaches for priority industries such as construction and chemicals, as does New Zealand. The strategic management plan of the United States OSHA also pays particular attention to high-risk industries and factors, recognizing that resources should be focused on the areas that provide maximum return on government investment. In particular, the US has targeted new strategies for hard-to-reach transient employees and workers in the construction industry, which has a fatal accident rate three times that seen in general industry.

The emphasis on high-risk activities is also to be found in the United Kingdom. The consultative document prepared by the Health and Safety Commission reveals that it is almost 17 times more dangerous to work in agriculture, fisheries, and forestry, and over 14 times more dangerous in construction, than to work in the service sector. The average days lost per worker per year as a result of work-related illness is highest in the nursing sector, followed by coalmining and construction. These comparisons help to decide where efforts should be targeted, notwithstanding the significant differences in the nature of employment between sectors. Comparisons within sectors point to the significant improvements that could be made by bringing the worst performing workplaces closer to the better performers.

Source: Promotional framework for occupational safety and health, International Labor Conference, 2005.

As a final note on the impact of risk regulation in Armenia, though it has to be accepted that an individuals' right to protection at work should relate to the level of risk, and not employment numbers, it is important to note that small firms can also face significant challenges with OSH regulations. Small firms are not just smaller versions of large organizations. They need help to understand their problems and meet their legal obligations. The business case for OSH based on cost-saving is likely to be less persuasive in small firms than an approach based on ethical considerations and the contribution which OSH can make to improving business efficiency, innovation, effectiveness, and competitiveness. Care should be taken to avoid over-bureaucratizing OSH regulations in small firms through the development of performance standards.

Table 2: Distribution of workers working in hazardous and dangerous conditions across sectors of economy, 2006

At the end of year		Percentage to the total of appropriate group			
	Total, Persons	Including			
		Mining and Manufacturing	Electricity, Gas and Water production and distribution	Construction	Transport and Communication
The number of listed workers	103,717	43.5	21.5	9.7	25.3
The number of workers who have worked under:	9,276	76.1	17.5	2.9	3.4
High noise, ultra voice and infra voice conditions	2,694	74.4	13.4	6.2	6.0
High level of vibration	1,430	63.3	22.7	1.9	12.2
Working air dust pollution, gas and ionizing and non ionizing radiation conditions	6,525	76.2	19.7	1.2	2.9
Heavy physical work conditions	4,098	76.2	9.0	9.9	5.0

Source: Labor Market in Armenia, 2003-2006, NSS 2007, Armenia

Factoring in the Cost of Regulation

In order to generate maximum benefits to society at the least cost, OSH regulations must be based on a methodology that regulates where necessary (i.e. where benefits exceed costs) *and* leaves alone areas where regulation could have a negative effect (i.e. where costs exceed benefits). However, this has not always been the case: in the early days of OSH regulation, the legislative mandates of health and safety regulatory agencies urged the promulgation of standards that promoted safety without consideration of the costs (for example, the goal of the US Occupational Safety and Health Act (OSHA) of 1970 is "to assure so far as possible every man and woman in the Nation safe and healthful work conditions"). The absence of cost in determining regulatory priorities not only led to burdens on industry, it also diverted government resources, as energy was spent on eradicating risks instead of focusing on levels that were present but still safe. Thus, examining the cost of proposed regulation also helps to determine the priorities for regulation and enforcement.

While any of the three approaches we have discussed will help by themselves to spread the benefits of regulation, there needs to be some accounting of the cost of regulations in order to properly determine the net benefit of OSH legislation. The proper economic concern for government policy is to assess the expected number of lives saved by a regulation against the costs of the regulation, and thus decide if a certain regulation is simply too expensive for the risk

probabilities. Under this framework, not every industry is risky, not every risk is regulated, but every regulation is matched against both risks and costs.

But how would one do this? Costs are notoriously slippery and difficult to calculate in regards to regulations without advanced statistical modeling (and even then, there is no guarantee the assumptions were correct). In order to set some sort of baseline, in many countries, the unit for measuring the effectiveness of regulation is the "value of a statistical life." This value attempts to quantify how much a particular life is worth, creating a standard to put against the cost of a regulation. In theory, regulations that cost more than this value would be too costly, while those below it would be worth it to enact.

The calculation of the value of a statistical life was also begun in the 1970s, using detailed data on wages and prices to estimate people's tradeoffs between money and fatality risk, thus establishing a value based on market decisions. For workers in jobs of average risk, the estimates imply that, in current dollars, workers receive premiums in the range of $600 to face an additional annual work-related fatality risk of one chance in 10,000. Put somewhat differently, if there were 10,000 such workers facing an annual fatality of one chance in 10,000, there would be one statistical death. In return for that risk, workers would receive total additional wage compensation of $6 million. The compensation establishes the value of a statistical life, based on workers' own attitudes toward risks. When economists such as W. Kip Viscusi and Robert Smith first developed estimates in the millions of dollars, some critics suggested that they might be too high. They were, for example, higher than estimates developed by Richard Thaler and Sherwin Rosen that focused on workers in very high-risk jobs. Numerous studies over the past several decades have, however, documented the plausibility of estimates in the $3 million to $8 million range.[3]

Of course, the value of a statistical life approach only approximates benefits, still leaving costs uncalculated. There are several different methods to approximate the costs of a regulation, including opportunity cost, direct costs for equipment, labor, process change, and statistical modeling. The basic US federal guidelines for calculating cost are shown in Box 2, and the Environmental Protection Agency's (EPA) more detailed guidelines are shown in Annex 1. Cost determination usually follows an economic premise, and any person with economic training should be able to at least create a rough estimation of cost.

Having computed cost, the MLSI can thus compare costs to the statistical value of a human life to form a rough guide in determining if a regulation is cost-effective or not. For example, a regulation that purports to save 5,000 lives in Armenia would thus have a benefit of $30 billion if the value of a statistical life is measured at $6 million. However, if the cost of this regulation is over $6 million per life saved, perhaps resulting in a cost of $70 billion in total, this rough analysis would say that the regulations are too costly and should not be attempted. Thus, regulations that have been prioritized due to our previous framework (risk) can then be further analyzed for cost before they are drafted and enacted.

[3] This discussion is based on W. Kip Viscui and Ted Gayer, "Safety at Any Price?" *Regulation*, Fall 2002.

Box 4 – US Federal Government Guidelines on Determining Cost

The preferred measure of cost is the "opportunity cost" of the resources used or the benefits forgone as a result of the regulatory action. Opportunity costs include, but are not limited to, private-sector compliance costs and government administrative costs. Opportunity costs also include losses in consumers' or producers' surpluses, discomfort or inconvenience, and loss of time. These effects should be incorporated in the analysis and given a monetary value wherever possible.

The opportunity cost of an alternative also incorporates the value of the benefits forgone as a consequence of that alternative. For example, the opportunity cost of banning a product (e.g., a drug, food additive, or hazardous chemical) is the forgone net benefit of that product, taking into account the mitigating effects of potential substitutes. As another example, even if a resource required by regulation does not have to be paid for because it is already owned by the regulated firm, the use of that resource to meet the regulatory requirement has an opportunity cost equal to the net benefit it would have provided in the absence of the requirement. Any such forgone benefits should be monetized wherever possible and either added to the costs or subtracted from the benefits of that alternative. Any costs that are averted as a result of an alternative should be monetized wherever possible and either added to the benefits or subtracted from the costs of that alternative.

All costs calculated should be incremental, that is, they should represent changes in costs that would occur if the regulatory option is chosen compared to costs in the base case (ordinarily no regulation or the existing regulation) or under a less stringent alternative. Future costs that would be incurred even if the regulation is not promulgated, as well as costs that have already been incurred (sunk costs), are not part of incremental costs. If marginal cost is not constant for any component of costs, incremental costs should be calculated as the area under the marginal cost curve over the relevant range. A schedule of monetized costs should be included that would show the type of cost and when it would occur; the numbers in this table should be expressed in constant, undiscounted dollars.

The Economic Analysis (EA) should identify and explain the data or studies on which cost estimates are based with enough detail to permit independent assessment and verification of the results. Where cost estimates are derived from a statistical study, the EA should provide sufficient information so that an independent observer can determine the representativeness of the sample, the reliability of extrapolations used to develop aggregate estimates, and the statistical significance of the results.

As with benefit estimates, the calculation of costs should reflect the full probability distribution of potential consequences. Extreme values should be weighted, along with other possible outcomes, by estimates of their probability of occurrence based on the available evidence to estimate the expected result of a proposed regulation. If fundamental scientific disagreement or lack of knowledge precludes construction of a scientifically defensible probability distribution, costs should be described under plausible alternative assumptions, along with a characterization of the evidence underlying each alternative view. This will allow for a reasoned determination by decision makers of the appropriate level of regulatory action. That level of action should derive from the decision making process, not from adjusting cost estimates upward or downward at the information-gathering or analytical stages of the process.

Estimates of costs should be based on credible changes in technology over time. For example, a slowing in the rate of innovation or of adoption of new technology because of delays in the regulatory approval process or the setting of more stringent standards for new facilities than existing ones may entail significant costs. On the other hand, a shift to regulatory performance standards and incentive-based policies may lead to cost-saving innovations that should be taken into account. In some cases agencies are limited under statute to considering only technologies that have been demonstrated to be feasible. In these situations, it may also be useful to estimate costs and cost savings assuming a wider range of technical possibilities.

As in the calculation of benefits, costs should not be double counted. Two accounting cost concepts that should not be counted as costs in benefit-cost analysis are interest and depreciation. The time value of money is already accounted for by the discounting of benefits and costs. Generally, depreciation is already taken into account by the time distribution of benefits and costs. One legitimate use for depreciation calculations in benefit-cost analysis is to estimate the salvage value of a capital investment.

Source: US Office of Management and Budget, “Economic Analysis of Federal Regulations under Executive Order 12866,” available on-line at: http://www.whitehouse.gov/omb/inforeg/riaguide html#iii.

Scope of the Regulation II: How to Regulate?

Once costs and benefits have been set against each other and the priorities determined for who to regulate, the final determination of the scope of the OSH regulation is how it will be done: should the OSH framework be several smaller pieces of legislation or rules, or should it be one larger Act that encompasses all the priority industries or sectors?

Current international practice comes down squarely on the side of a comprehensive regulation that serves as the framework for a country's occupational safety and health laws, with secondary legislation designed later as necessary. The benefits of a comprehensive regulation are that it:

- Avoids fragmentation across government
- Allows for further, more specific normatives as necessary
- Covers a broad swath of the economy for minimal standards
- Preserves flexibility in other areas that do not need to be regulated.

In the EU, a single, comprehensive OSH regulation is the standard. Given its broad sweep, comprehensive regulation may not be as detailed as secondary legislation, but it still gives technical specifications for issues and sectors that are defined as risky by our metrics above. As an example, one of the most important and effective comprehensive regulations in the EU pertaining to OSH comes from Ireland, which contains provisions related to:

- Workplace Guidance
- Use of Work Equipment Guidance
- Personal Protective Equipment – Guidance
- Manual Handling of Loads – Guidance
- Display Screen Equipment – Guidance
- Electricity Guidance
- Work at Height – Guidance
- Noise Guidance
- Vibration Guidance
- Protection of Young Persons – Guidance
- Pregnant, Post Natal and Breastfeeding Employees – Guidance
- Night Work and Shift Work – Guidance
- Safety Signs at Places of Work – Guidance
- First Aid Guidance
- Explosive Atmospheres at Places of Work - Guidance

Unlike other texts produced in the EU (most notably the UK, which is the result of years of iterations and is cumbersome and unwieldy), Ireland's framework legislation is smaller (at 120 pages) and more instructive, focusing on proper methods rather than prohibition. The broader scope of the Irish regulation also splits the difference between the risk distribution and labor distribution standards noted above: in some provisions, the greatest number of workers are targeted (such as display screen equipment), which in others, the greatest risks in the greatest industries are captured (such as work at height and explosive atmospheres).

Conclusion

In short, as the MLSI sits down to write the actual regulation for occupational safety and health, it should be comprehensive, based on risk analysis and an appreciation of benefits versus costs for each separate section, and the specific standards are based on performance and not on government-dictated processes. A document that contained all of these methods would truly be on the cutting edge internationally, and would make enforcement much easier, as well as use advanced tools to target the Ministry's resources. In turn, this would improve safety outcomes on a much broader scale than if the regulations were done in a piecemeal manner. Given Armenia's position, and the desire to both protect workers while not weakening the business climate, such a regulation would help to improve safety and help Armenia retain competitiveness.

ANNEX 1

EPA Guidelines on Cost Determination