

# Commentary

## A Third Wave In Asbestos Liabilities Lies Ahead: Actuarial Models Are Systematically Underestimating Exposures

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Our research suggests that asbestos liabilities are larger than generally anticipated. The actuarial models used to project the incidence of serious asbestos claims (such as mesothelioma, asbestosis and associated lung cancers) appear to be systematically biased to under-project actual claims. (The insurance companies with the largest share of annual incurred asbestos losses are shown in Figure 1.) Anecdotal evidence found in insurers' financial reports over the past several years supports this assertion. For example, rating agency A.M. Best notes that the industry has reverted to a pay-as-you-go approach to funding asbestos losses with the annual run rate in the range of \$2.5 billion. Much more persuasive, in our view, is the confluence of the evolving body of medical literature and shifting societal and media trends that, when combined, point

to a third wave of serious asbestos claims that will likely stain the financial results of insurers for years to come.

**Some insurers have bravely, or naively, reported that asbestos environment is little changed in recent years. We disagree.**

### Findings And Executive Summary

The reasons we expect serious asbestos claims to continue driving insurance liabilities higher include:

1. **The models used by major consulting firms and, most likely, most insurance companies, rely on outdated assumptions.** Constructed in the mid-1980s and recalibrated once in the later-1990s (based on information and belief), we observe that new epidemiological studies and dramatic shifts in medical knowledge, life expectancies, and societal behaviors warrant another, likely dramatic overhaul of the actuarial models. The result, we expect, would be higher forecasted claims and an explanation for the series of annual "surprises" that many insurers relay each time they fund rising asbestos payments with yet another "one-time," annual reserve charge. While most insurers study their asbestos liabilities annually, studies that continually tweak outdated epidemiological and exposure assumptions cannot be expected to perform well in the face of fundamental shifts in the processes driving new claims.

2. **People are living into their asbestos-induced disease.** The long latency period of asbestos illnesses is well understood (documented at 40+ years depending on the intensity of exposure). Yet, current actuarial models are unlikely to account for both rising life expectancy overall or, more important, changes that specifically affect the population of occupationally exposed workers. Longer life spans mean more people will live to discover their asbestos-related illness and report a claim.

For instance, death rates from prostate cancer have fallen by 20% over the past 10 years (occupational asbestos exposure affects males predominantly). More impactful – smoking rates have plummeted since the 1980s when the epidemiological models were first created, and even more recently the volume of cigarettes consumed by smokers has declined dramatically. We document both trends later in the report.

3. **Advances in medical knowledge point to greater exposures and higher medical severities than models likely contemplate, creating an overall worsening landscape for insurers.** Take smoking as one example. Medical researchers are increasingly recognizing (and documenting) the malignant synergy between asbestos exposure, asbestosis, and smoking. One recent study found asbestos exposure (in the absence of asbestosis) increased the lung-cancer rate 5.2-fold among nonsmokers, compared to smoking, which increased the rate by 10.2-fold. Taken together, however, the rate of lung cancer increased more than 28x. When a smoker also has evidence of asbestosis (i.e., documented damage and scarring to the lungs caused by asbestos exposure) his risk of developing lung cancer is nearly 37x that of this study's control group.<sup>1</sup>

Less appreciated, however, is that smoking cessation has an almost equally powerful, and favorable, impact on longevity. For instance, one recent study concluded that "lung cancer mortality among insulators dropped precipitously after smoking cessation, and proportionate to that of smokers who were unexposed to asbestos." After 30 years, the risk of lung cancer death among the insulators studied was no different than that of insulators who had never smoked.<sup>2</sup>

This is good news indeed for those who still smoke, and consistent with the phrase used by pulmonologists who exhort smokers to quit but in the absence of quitting remind patients that "less is more." But why might this societal positive be a negative for insurers? Surely some asbestos-exposed former smokers will see their lives prolonged and may stave off the development of an asbestos-induced lung disease. But others, we postulate, will simply live longer than the 1980s-calibrated actuarial models forecast, only to live *into* their asbestos-induced lung disease, be it mesothelioma or another form of lung cancer. The smoking rate among men over age 18 when the epidemiological studies were crafted was 30%, and smokers consumed, on average, about 1.5 packs per day. By 2010, the smoking rate had declined to roughly 21.5% among American men, who consumed 45% fewer cigarettes daily.

4. **A third wave of asbestos exposures could sweep the nation.** We do not believe this is adequately accounted for in insurers' loss reserves as these new claims are typically non-occupational exposures (known as "bystander" exposures in industry parlance), whereas insurers most often reserve for occupational exposures. In many cases, the plaintiffs are long-time smokers with some form of above-normal, non-occupational exposure to asbestos. Unfortunately for the exposed and insurers alike, medical research increasingly supports the assertion that 1) smoking and asbestos exposures are supra-additive<sup>3</sup>; 2) there is no threshold of asbestos exposure below which one cannot develop mesothelioma; 3) and even short but intense non-occupational exposures, such as from home renovation, can heighten the risk of asbestos-induced lung diseases.<sup>4,5</sup>

In short, insurers asserting that the recent spate of lung cancer cases (alleging asbestos involvement) are without merit may find that they are on the wrong side of science, and potentially the law.

5. **The intersection of diagnostic bias and new screening recommendations may increase the number of claims.** The increasing use of high-resolution CT-scans may increase the diagnosis of asbestosis relative to cloudier

X-rays. The data to support that assertion may become available sooner than contemplated by most insurers or their consultants' models. In 2013, the U.S. Preventive Services Task Force recommended that current and former heavy smokers between the ages of 55 and 80 should undergo annual CT scans. As many as 10 million people could be affected by this recommendation.

Importantly, the Task Force's recommendation included a grade of "B" which should lead to the annual procedure being covered by Obamacare-compliant health plans. We won't speculate as to the percentage of those 10 million people who might be found to have asbestos-induced lung scarring, but

clearly the answer is not zero, and this development alone should lead to an uptick in the number of asbestos claims and lawsuits.

The balance of this research note consists of the following sections:

**Serious Asbestos Cases Are Not Subsiding As Predicted By Models Overview Of Current Models And Their Shortcomings People Are Living Into Their Disease The Third Wave Of Asbestos Exposure – Worse Than Anticipated Diagnostic Bias And New Recommendations Could Fuel New Claims**

The sections following present data in the form of charts and tables supporting our assertions. We'll also call out quotes and findings from the medical

**Figure 1: Five-Year Average Incurred Asbestos Losses 2008-2012: Top 15 Groups**

(1)	(2)	(3)	(4)	(5)	(6)
\$(000)	5-Year Average Annual Asbestos Loss	Normalized Net A&E Paid Share (2012)	Asbestos Reserves 2012	Avg. Annual Asbestos % Avg. Earnings	Asbestos Reserves % Equity
1 Travelers Group	\$140,300	15.1%	\$2,361,180	4.9%	9.5%
2 American International Group	\$353,854	5.1%	\$2,196,660	5.1%	2.2%
3 Berkshire Hathaway Insurance Group	\$66,721	2.4%	\$2,023,980	0.5%	1.0%
4 Hartford Insurance Group	\$155,252	5.2%	\$1,590,360	62.7%	8.4%
5 Nationwide Group	\$90,920	6.4%	\$1,391,200	37.7%	10.0%
6 Munich Re America Corp Group	\$175,440	3.5%	\$1,298,640		
7 Allianz of America (Fireman's Fund)	\$99,278	3.9%	\$1,166,100		
8 CNA Insurance Group	\$69,420	6.9%	\$1,123,200	10.1%	9.2%
9 Liberty Mutual Insurance Co	\$172,227	8.2%	\$891,700	25.2%	5.3%
10 Fairfax Financial (USA) Group	\$121,751	2.3%	\$869,440	52.2%	10.8%
11 ACE INA Group	\$76,761	6.3%	\$790,830	2.8%	2.8%
12 White Mountains Insurance Group	\$48,314	3.0%	\$776,050	12.2%	18.1%
13 Chubb Group of Insurance Cos	\$9,168	2.5%	\$586,500	0.5%	3.8%
14 Farmers Insurance Group	\$81,196	1.3%	\$357,120	64.1%	7.1%
15 Alleghany Insurance Holding	\$57,729	0.2%	\$258,500	15.4%	3.8%
Total/Median	\$1,718,331		\$17,681,460	12.2%	7.1%
All Other	284,558		5,235,060		
<b>Total Industry</b>	<b>\$2,002,889</b>		<b>\$22,916,520</b>		
Top 15	86%		77%		
All Other	14%		23%		

Notes:

(1)-(3) Taken from A.M. Best Report Tables 7 and 8

(4) Calculated by Assured Research from A.M. Best Table 7 (A&E Reserves \* Asbestos Mix)

(5) Col (2) divided by GAAP earnings for GAAP-filers; Stat earnings for Stat filers  
GAAP data from 2009-3Q13; Stat data from 2008-2012. Data not tax-affected

(6) Uses GAAP equity at 9/30/13, Statutory surplus at 12/31/12. Data not tax-affected  
Other: Munich Re and Allianz not completed owing to reinsurance relationships with parent companies

Source: A.M. Best (October, 2013 Special Report), SNL Financial, Assured Research.

literature we reviewed. In short, our aim will be to supplement the findings shared in the executive summary. Please contact us with questions, observations, or requests for additional information.

But before digging into the data, we present in Figure 1 a table of the 15 insurance groups with the largest 5-year average incurred losses between 2008 and 2012. These are clearly companies operating, at least recently, on a pay-as-you-go basis where reserves are held constant (more or less) while calendar year payments are offset by current accounting year accruals. Accountants and actuaries frown on this approach, and we're reminded that the industry was operating largely on a pay-as-you-go basis back in the late 1990s and early 2000s before a series of large charges reported by many of the companies in Figure 1.

We have added two measures useful for dimensioning the asbestos liabilities relative to the earnings and balance sheets of these insurance groups. In the cases of Munich and Fireman's Fund, we opted not to include the measures since each has engaged in substantial reinsurance arrangements with their foreign parent companies.

Lists of companies with asbestos exposures have been around for years. **What is new is that the era**

**of meaningful asbestos-induced reserve charges may not be over.**

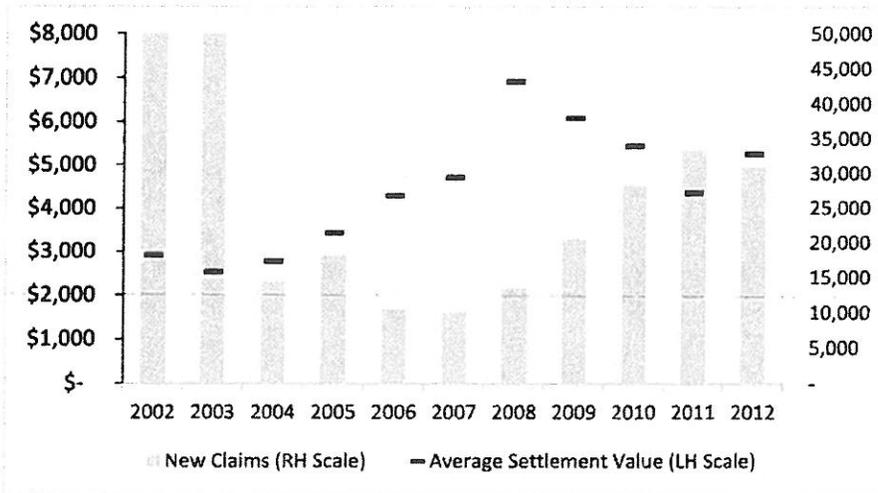
**Serious Asbestos Cases are Not Subsiding As Predicted By Models**

After observing for a number of years that insurers were gradually increasing their provisions for asbestos liabilities, A.M. Best raised its estimate of ultimate asbestos liabilities by \$10 billion, to \$85 billion, in December 2012. Noting higher-than-expected claims of both mesothelioma and lung cancer, the rating agency concluded that "it is likely that asbestos losses will continue unabated for many years to come."<sup>6</sup>

Towers Watson came to largely the same conclusion in their recent report on asbestos liabilities. Citing the same rise in mesothelioma claims, the consultancy also noted rising severities and higher legal costs as drivers of increased loss activity. Noting that the industry could be reserved too optimistically, the firm concluded "the industry can expect to add several more billion dollars to its hefty tally for this vexing mass tort."<sup>7</sup>

These reports are useful, we think, insofar as they do a good job of harnessing statutory data and sprinkling their data-driven observations with anecdotes (undoubtedly drawn from company commentary)

**Figure 2: New Claim Filings and Average Settlement Costs from Manville Personal Injury Trust**



Source: Documents retrieved from [www.mantrust.org](http://www.mantrust.org), Assured Research. Years 2002 and 2003 are capped at 50K claims. Actual claims (56K and 101K in 2002, 2003) were higher largely due to a rush to file before distribution parameters were tightened in 2002/2003.

about the sources of adverse claim development. But there is much more to the story!

Vast gains in medical knowledge; shifting societal behaviors, new incentives to seek medical screening. . . a simple review of statutory data seems wholly unfulfilling and sure to fall short of the substance behind the rising asbestos claims.

Before moving on, we'll share recent trends in new claim filings drawn from documents filed by the Manville Personal Injury Settlement Trust. After a rush of claims influenced by tightening distribution guidelines (affecting 2002-2005 in Figure 2), we can see that filings have begun to rise once again. Moreover, the documents filed each quarter increasingly speak of a rising share of malignancy filings. It seems the Manville Trust is experiencing the same phenomenon as insurance companies.

### Overview Of Current Models And Their Shortcomings

Research by the major consulting firms and many of the professionals employed by the most exposed firms has greatly advanced efforts to quantify asbestos liabilities. But we have come to believe that the models are in dire need of a substantial overhaul. Much like a car will likely need more than an oil change at its 100K mile checkup, so too the actuarial models – with their chassis built in the earlier 1980s and just one substantive update about a decade later – need to be recalibrated to reflect the advancements in medical knowledge and the many societal changes discussed throughout this report.

Before exploring the latter, we'll first share an admittedly (and perhaps grossly) simplified version of the typical asbestos model. In turn, we'll comment on where the shortcomings may reside as well as the reasons for the bias that has led to many insurers reporting a "surprising" number of serious asbestos claims.

1. The asbestos model starts with a cohort, or population of people exposed to asbestos in varying degrees. Miners and millers of asbestos were obvious members of the exposed population, while those working in industries that used products containing asbestos (such as plumbers, shipbuilders, and carpenters) constituted some of the second-wave of exposures.

Many of the fringe, or unexpectedly exposed occupations, fueled the reserve charges taken by insurers from 2002-2005.

*What's new? New research has revealed that even low-dose, non-occupational exposure to asbestos can be hazardous (think familial exposures, air pollution, home renovators).<sup>8</sup> What's more, the people exposed are becoming plaintiffs.*

2. As we understand it, asbestos models with their roots in the 1980s rely on epidemiological studies that have not been updated since. Yet medical sites are rich with studies that have advanced our understanding of the etiology of asbestos.<sup>9</sup> Most important, a growing body of evidence reveals that "there is no proof of a . . . minimal lower limit below which asbestos fibres cannot cause. . . mesothelioma."<sup>10</sup> In short, we suspect the underpinnings of today's actuarial models simply aren't sufficiently sensitive—even where they accurately estimate the size of the exposed population—to produce a credible estimate of the volume of lung diseases given different levels of exposure.
3. After estimating illnesses from an exposed population, actuarial models must estimate the latency period for this disease. . . often 40 years or more. We are not aware of material changes in the estimates surrounding the latency period (though we have seen commentary linking heavier exposures to meaningfully reduced latency periods). However, this issue is related to the matter of morbidity and mortality.
4. Morbidity and mortality assumptions are necessary to calibrate the rate at which sickened individuals turn first into claims, and then into claim payments. It is here, in particular, that we see the need for an actuarial upgrade. Increasingly, people are living into their (asbestos-induced) disease. It is not difficult to consider, for instance, the case of a 65-year-old insulator and former smoker who if diagnosed at that age in 1985 might have died within a few years – before asbestosis and years of smoking turned into a reportable claim. Roll the clock forward and that same 65-year-old in 2010 has a 98% chance of surviving his prostate cancer past

ten years . . . plenty of time for years of smoking and asbestos exposure to fuse and become a reportable asbestos claim.<sup>11</sup>

We'll explore this concept further in the next section – Living into Their Disease.

- Actuaries must turn estimates of claims at different levels of medical severity into claim dollars. They do so using a financial calculator that would consider the insured's propensity to sue, a success rate, and average award values, among other variables. This subject is not the focus of our report, and we don't envy the actuaries forced to make these difficult estimates.

### People Are Living Into Their Disease

Life expectancy has been rising steadily for generations, as Figure 3 reveals. More important, we think, is the increase in life expectancy of a 65-year-old man from the 1940s onward. Little progression in life expectancy – having attained age 65 – was made until the early 1980s, after which a 65 year-old has enjoyed a 20% increase in their life expectancy – to 82.3 from 79.2. Those additional three years may not present a huge window in which to report an asbestos claim, but neither are they immaterial; and in either case may not be adequately accounted for in the actuarial models.

The most relevant insight, we think, comes from recent research revealing the powerfully beneficial impact of smoking cessation (and smoking less where cessation proves too difficult) with mega-social trends toward doing just that – not smoking and smoking less.

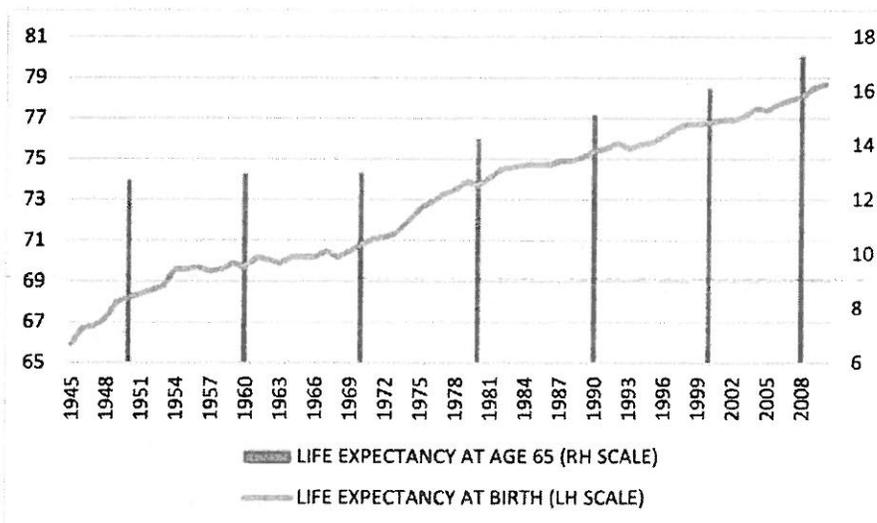
The research was previously cited, but it bears repeating some of the conclusions from this impactful study:

*"Do insulators with heavy long-term asbestos exposure experience the benefit of smoking cessation? Lung cancer mortality among insulators dropped precipitously after smoking cessation and proportionate to that of smokers who were unexposed to asbestos."<sup>12</sup>*

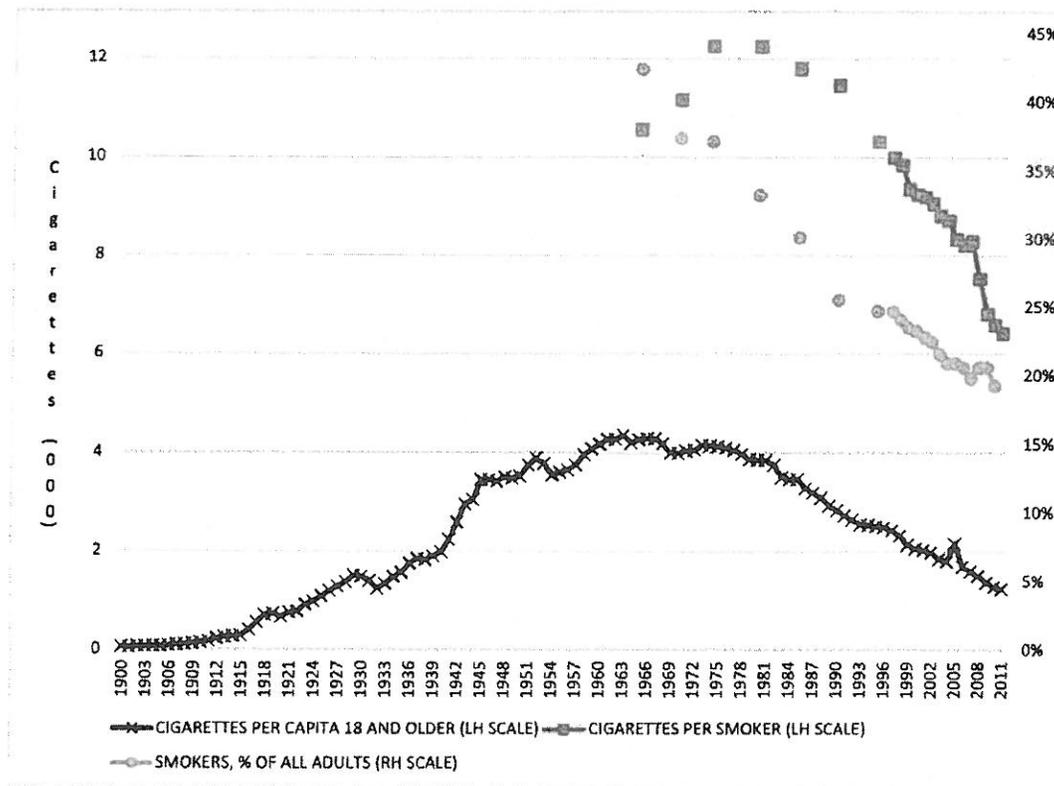
*"The risk of lung cancer death among insulators who had quit smoking at least 30 years previously converges with that of never-smoking insulators."<sup>13</sup>*

This data is highly relevant given the prevalence of smokers among those exposed (occupationally, at least) to asbestos. And while quitting smoking can add years to your life, we can observe using data from the American Lung Association that the number of smokers has fallen precipitously since the mid-1980s and even the late 1990s – exactly when the actuarial models were built and last recalibrated.

Figure 3: Life Expectancy from Birth and from Age 65 (Male)



Source: CDC, Assured Research.

**Figure 4: Smoking Rates and Cigarette Consumption**

Source: American Lung Association, Trends in Tobacco Use (July, 2011), CDC Mortality Weekly (August, 2012), Assured Research.

Fewer Americans are smoking and those who do smoke less...45% less measured from 1985 when the epidemiology study regarding smoking and asbestos was incorporated into the actuarial model. Literature and conversations with pulmonologists confirm that smoking less matters if smoking cessation is not workable. (Don't tell your kids, who will only hear, "It's OK to smoke, just not too much.")

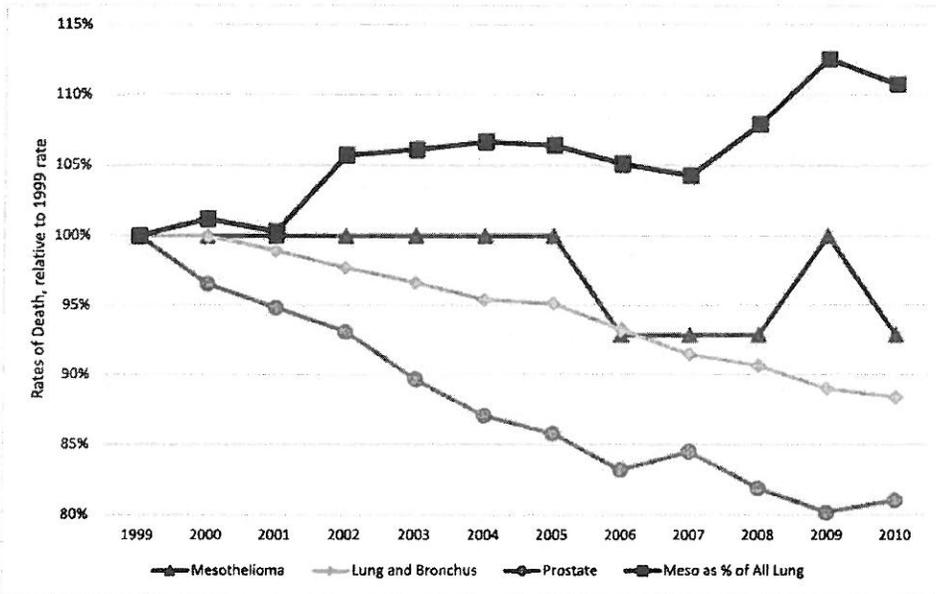
In short, there have been some massive societal shifts in smoking over the past 25 years. But what is the impact on serious asbestos claims, such as mesothelioma, lung cancer and asbestosis? Perhaps counter-intuitively, we believe it will lead to more claims.

While the death rates from lung cancer have declined, along with incidence rates, deaths from mesothelioma have remained steady, albeit a bit volatile lately (Figure 5). Consequently, mesothelioma's

share of all lung deaths has risen more than 10% since 1999. This observation is consistent with commentary observed in the Manville Trust filings as well as insurance company commentary: the incidence of serious mesothelioma cases appears to be on the rise (or at least not falling as expected). We also include prostate cancer in Figure 5 to show that it too has 1) exhibited a remarkable decline in death rate and 2) because it is one of the leading killers of men and relevant to a predominantly male population of asbestos plaintiffs.

*Taking all these data together, we conclude that the population most likely to report an asbestos claim has enjoyed an increase in life expectancy that is not contemplated in the actuarial models currently governing insurer's asbestos liabilities. Longer lives could be beneficial for insurers, but they also translate into an unexpectedly large pipeline of future claimants – people fortunate enough to survive long enough to live into their asbestos disease.*

**Figure 5: Cancer Death Rates: Mesothelioma, Lung, and Prostate**



Source: U.S. Cancer Statistics, Assured Research.

**The Third Wave Of Asbestos Exposure – Worse Than Anticipated**

We believe the third wave will be dominated by lung cancer claims which are ostensibly lower quality than those of mesothelioma because the cancer was predominantly caused by smoking rather than asbestos. Nevertheless, large numbers of even lower-quality claims could raise pressure on defendants anxious to settle and minimize nuisance suits. Moreover, recent research highlighted throughout this report illustrates researchers' rising awareness of the malignant synergies between asbestos and smoking. Further, researchers are finding that short but intense exposures to asbestos can lead to asbestos illnesses.

In part, this third wave will be aided by the growing prevalence of social media sites such as Google and YouTube which have lowered the cost of prospecting for claimants by lawyers. If you need convincing, search for "asbestos lawyers" and see how many hits you get. Or more directly, type in the name of any well-known asbestos law firm and see how fast they come back to you with offers of direct conversations.

A November 2013 report by Mealey's is instructive in this area: *"Asbestos Litigation, Attorney Advertising & Bankruptcy Trusts: The Economic Incentives Behind the*

*New Recruitment of Lung Cancer Cases.*"<sup>14</sup> The report cites a dramatic increase in the number of lung cancer filings in Madison County, Illinois, and Delaware, two hotbeds for this litigation, but also cites New York, Philadelphia, and California as jurisdictions seeing rapid rises in lung cancer filings. For example, the number of cases filed in Madison County rose from 325 in 2006 to 1,563 in 2012 with preliminary figures suggesting a higher number in 2013. The Madison County asbestos docket lists about 2,200 cases today.

It is our understanding that most actuarial models intend to model only occupational exposures. Perhaps this is an area where companies or consultants make adjustments on an ad hoc basis (to update for unfolding facts and material deviations from expected claims). But based on information and belief, insurers are not adequately accruing for third wave claims.

Readers wanting to learn more about this purported third wave and the medical literature should contact us. People have different perspectives on the medical findings, but where credible research supports a plaintiff's claim, the defendant is usually facing an uphill battle. Insurers, apparently, are ascribing near-zero probability to the merits of these cases, holding few or

no reserves for them other than perhaps on individual cases. Zero probability is a very low standard to beat.

### Diagnostic Bias And New Recommendations Could Fuel New Claims

Readers might want to consider the following string of research papers and headlines:

**"Research Reveals Lower Asbestos Exposure No Protection Against Mesothelioma. . ."** (Offermans, NS, et al., "Occupational Asbestos Exposure and Risk of Pleural Mesothelioma, Lung Cancer, and Laryngeal Cancer in the Prospective Netherlands Cohort Study," *Journal of Occupational and Environmental Medicine*, December 17, 2013).

**"Increasing incidence of malignant mesothelioma after exposure to asbestos during home maintenance and renovation"** (Olsen, NJ. et al., *Med J Aust.* 2011).

**"Mesothelioma: cases associated with non-occupational and low dose exposures"** (Hillerdal, G., *Journal of Occupational and Environmental Medicine*, 1999; 56:505-513).

**"U.S. Panel Recommends Lung-Cancer Screening; Current and Former Smokers Ages 55-80 Should Get Annual CT Scans. U.S. Preventative Services Task Force Says"** (Dooren, J., and Winslow, R., *Wall St. Journal*, December 30, 2013).

We're reminded of a favorite saying of statisticians: *If you torture them long enough, statistics will tell you exactly what you want to hear.* A cynic might observe that a Google search of "asbestos" could allow someone with an agenda to string together a series of headlines to weave a story consistent with their preconceived outcome.

We assure readers that is not the case here. Skeptics may not be ready to take action just yet, but we'll suggest that those with a financial incentive to get the call on trends in asbestos liabilities right ignore these emerging data points at their own peril.

### Endnotes

1. Markowitz, S., et al. (April, 2013), Asbestos, Asbestosis, Smoking and Lung Cancer: New Findings from the North American Insulator Cohort,

*American Journal of Respiratory and Critical Care Medicine*, Vol. 188 2013.

2. Ibid.
3. As used in the medical research supra-additive conveys a combined affect that is more than additive but less than multiplicative.
4. Hillerdal, G., (1999) *Journal of Occupational and Environmental Medicine*, 56:505-51.3.
5. Offermans, NS, et al. (December, 2013), Occupational Asbestos Exposure and Risk of Pleural Mesothelioma, Lung Cancer, and Laryngeal Cancer in the Prospective Netherlands Cohort Study," *Journal of Occupational and Environmental Medicine*.
6. Asbestos Losses Fueled by Rising Number of Lung Cancer Cases (October, 2013), A.M. Best Company, Inc.
7. Summary of U.S. Property & Casualty Insurers' Asbestos Claim Reserves at Year-End 2012 (December, 2013), *Insights* by Towers Watson.
8. Robinson, B. (Nov. 2012), Malignant pleural mesothelioma: an epidemiological perspective. Baird Institute for Applied Heart and Lung Surgical Research.
9. Epidemiology is the study of the patterns, causes, and effects of health and disease conditions in defined populations – a cornerstone of public health. Etiology refers to the many factors coming together to cause an illness. It is normally the focus of epidemiological studies.
10. Hillerdal, G., (1999) *Journal of Occupational and Environmental Medicine*, 56:505-51.3.
11. Survival statistics taken from the National Cancer Institute at [www.cancer.gov](http://www.cancer.gov).
12. Markowitz, S., et al. (April, 2013), Asbestos, Asbestosis, Smoking and Lung Cancer: New Findings from the North American Insulator Cohort, *American Journal of Respiratory and Critical Care Medicine*, Vol. 188 2013.
13. Ibid.
14. Retrieved from <http://www.bateswhite.com/media/pnc/7/media.767.pdf>. ■