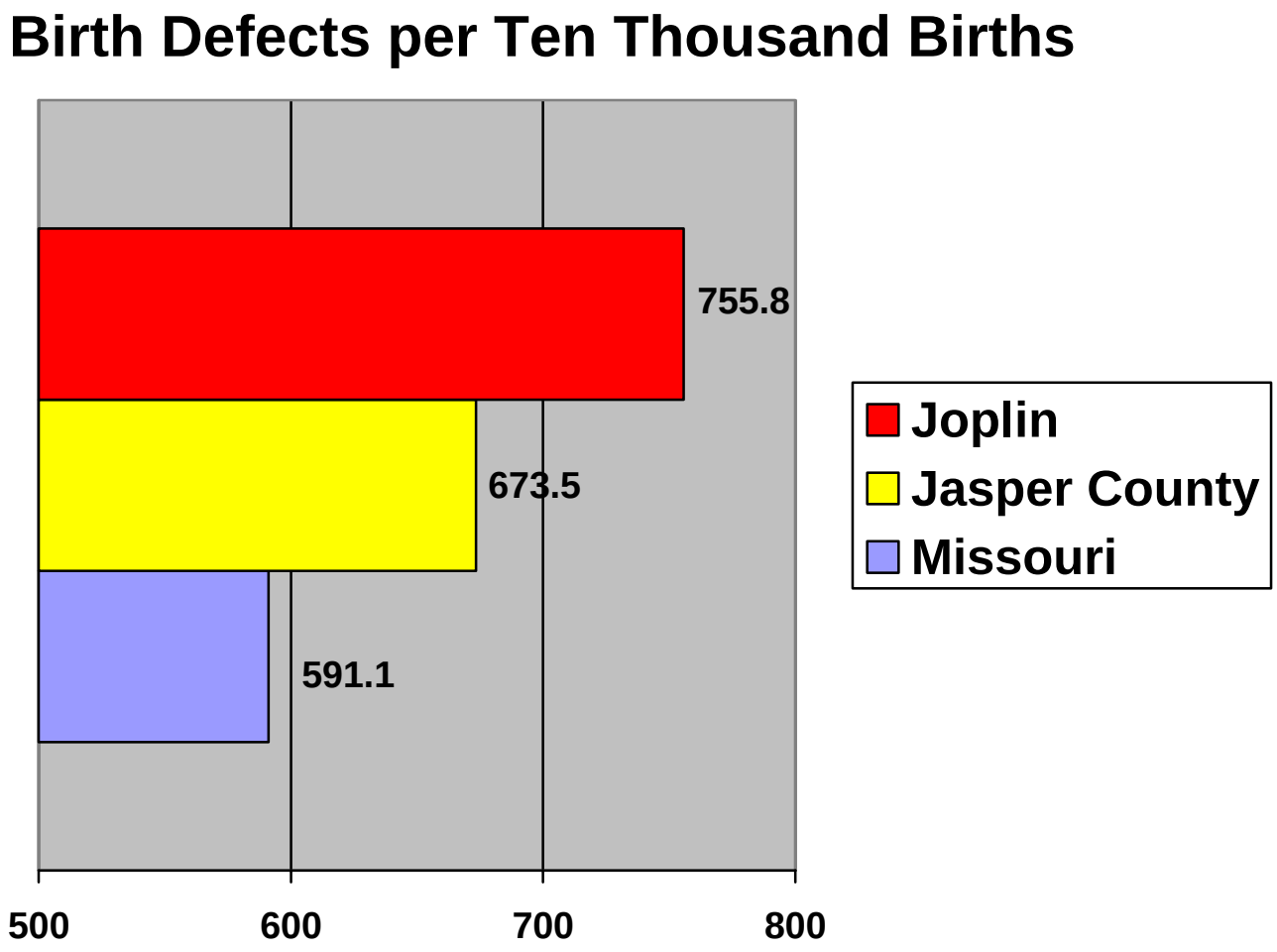
Alarmingly High Incidence of Birth Defects and Chronic Diseases in Joplin, Missouri Must Be Investigated

The United Steelworkers represents hundreds of workers in and around Joplin, Missouri, including at the EaglePicher specialty battery production facility. USW Local 812 members working for EaglePicher recently reported various concerns with health and safety conditions at the plant and with the surrounding environment. Health, safety and environment specialists from the USW headquarters in Pittsburgh responded by launching an investigation. This investigation has included extensive fact gathering from members, researching online databases and collaboration with other health, safety and environmental experts.

Although the investigation is still underway, USW has obtained disturbing information from the Missouri Department of Health and Senior Services about the incidence of birth defects and of various chronic diseases in Joplin. USW shared this information with a number of public health organizations, and these groups share our concerns. They are Birth Defects Research for Children, Inc., Healthy Child Healthy World, Kids for Saving Earth and MomsRising. Following is a presentation of this disturbing information followed by recommendations for increased monitoring and further investigation.

The rate of birth defects in Joplin is significantly higher than in Jasper County (where Joplin is located), which itself is significantly higher than in Missouri.



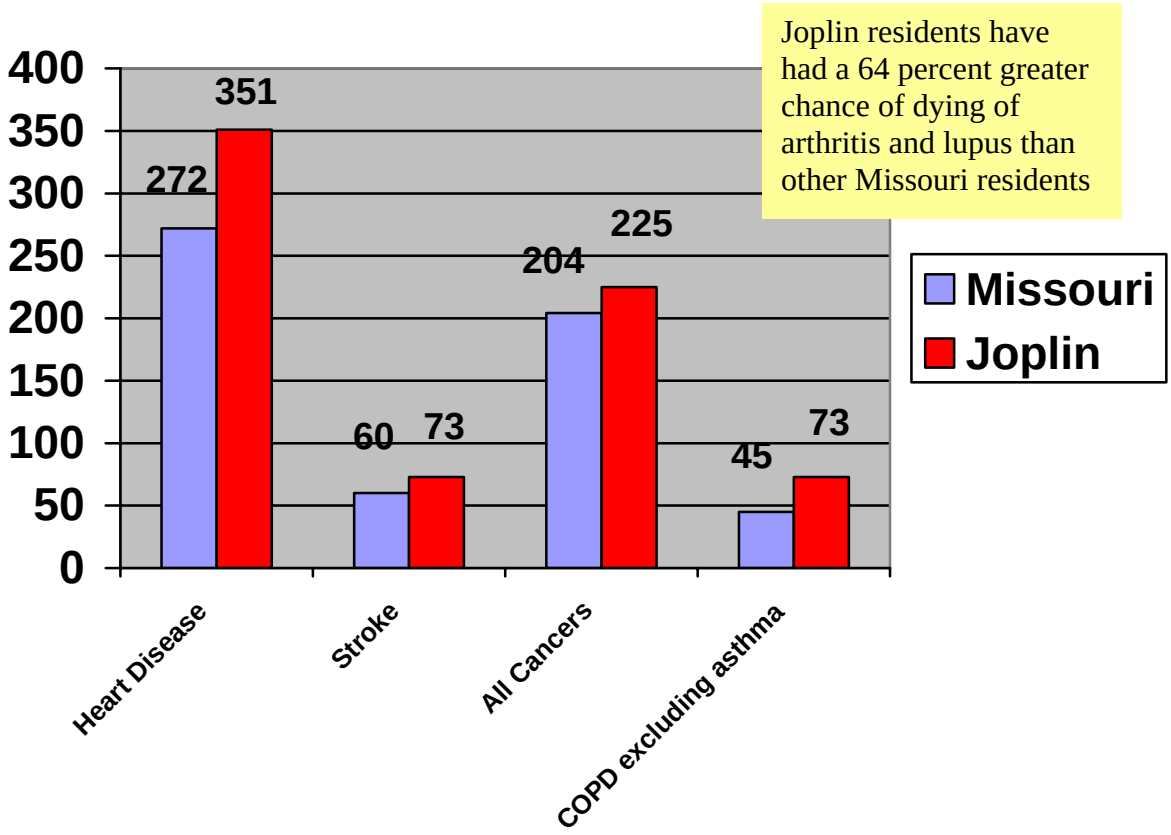
According to this data, for every 1,000 babies born in Joplin, *16 more* babies suffer with birth defects than in the rest of the state.

The figures in the graph above are for 2001 – 2005, the latest data available from the Missouri Department of Health and Senior Services (MDHSS).[1]

1 http://www.dhss.mo.gov/ASPsInfant/RegionBar.php?cod=0210234300&swtch=1&pth=%2Fweb%2Fdata2%2F&dtdb=infantdb&cndb=cntydb&lbdbs=inflabldb&cnty%5B%5D=097
http://www.dhss.mo.gov/ASPsInfant/RegionBar.php?cod=0210234300&swtch=1&pth=%2Fweb%2Fdata2%2F&dtdb=infantdb&cndb=cntydb&lbdbs=inflabldb&cnty%5B%5D=525

Joplin residents are at significantly greater risk than other Missouri residents of dying from a host of diseases:

Age-Adjusted Rate of Death for Named Diseases, 1996 – 2006, Missouri vs. Joplin[2] (per year per 100,000 population) [3]



Joplin residents' significantly elevated – in relation to other Missouri residents – rates of death for heart disease, stroke, and Chronic Obstructive Pulmonary Disease[4] raises the question of whether they are exposed to unusually high levels of air particle pollution or chemicals known to cause cardiovascular disease, like lead.

Unfortunately, there is insufficient monitoring to determine whether air quality in Jasper County meets National Ambient Air Quality Standards.[5]

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[2] http://www.dhss.mo.gov/ASPsChronicDisease/Main.php?cnty=525
[3] MDHSS and most public health agencies report rates in terms of 10,000 or 100,000, regardless of the actual size of a population. This makes it easier to compare rates across populations of different sizes.
[4] http://www.dhss.mo.gov/ASPsChronicDisease/Main.php?cnty=525
[5] http://www.stateoftheair.org/2008/states/missouri/particle-pollution.html

Joplin is afflicted by a significantly higher rate of a whole host of different kinds of birth defects, including central nervous system abnormalities, heart abnormalities, other circulatory and respiratory abnormalities, genital organ abnormalities and urinary organ abnormalities, as shown in the following table:

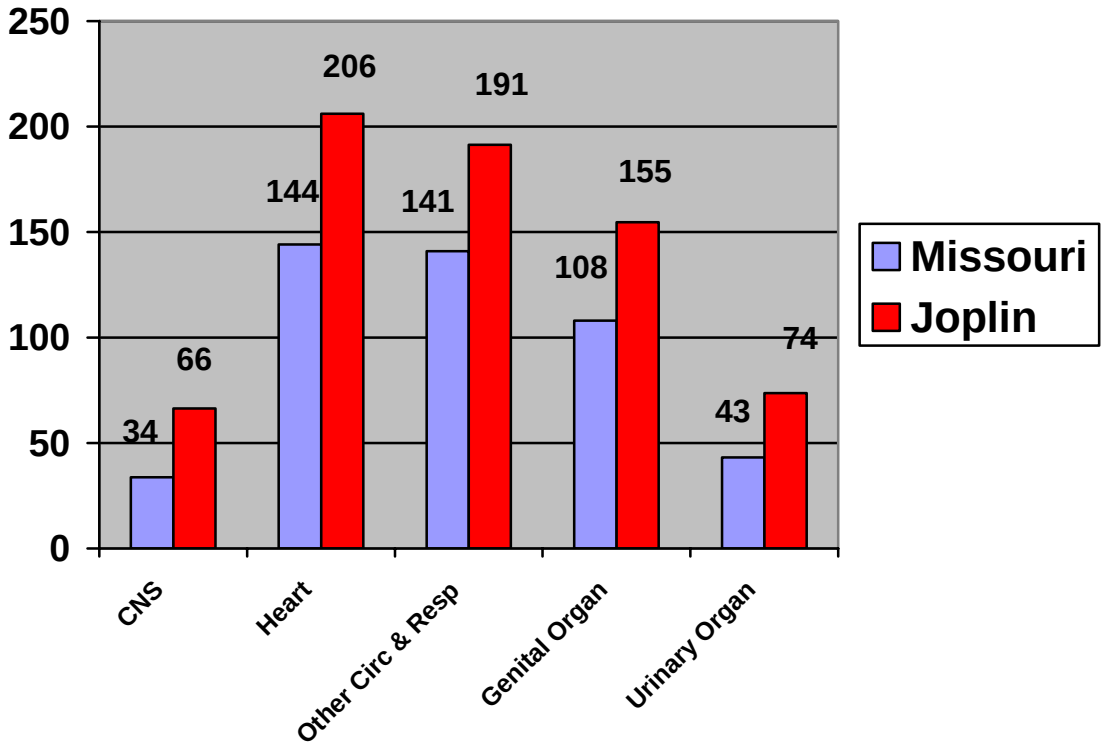
Selected Birth Defects Reported for Resident Live Births By Selected Areas of Residence: Missouri and Joplin 2001-2005

	Number of Births		Rate per 10,000 births		
	Missouri	Joplin	Missouri	Joplin	Significance
ALL CONGENITAL ANOMALIES	22,679	308	591.1	755.8	**-H**
Central Nervous System Anomalies	1,292	27	33.7	66.3	**-H**
Heart Anomalies	5,528	84	144.1	206.1	**-H**
Other Circulatory and Respiratory Anomalies	5,409	78	141.0	191.4	**-H**
Genital Organ Anomalies	4,144	63	108.0	154.6	**-H**
Urinary Organ Anomalies	1,656	30	43.2	73.6	**-H**

H: Joplin rate is significantly higher than Missouri rate.
Note that rates based on fewer than 20 events cannot be relied upon, but are important to recognize for further investigation.
Source: Missouri Department of Health and Senior Services, Bureau of Health Informatics: November 2008.

Selected Birth Defects: Joplin Significantly Higher than Missouri

(Rate Per Ten Thousand Births)



Information sent to public health specialist Dr. Kathleen Burns by MDHSS included the following details on some of the higher birth defect rates for Joplin compared to Missouri overall:

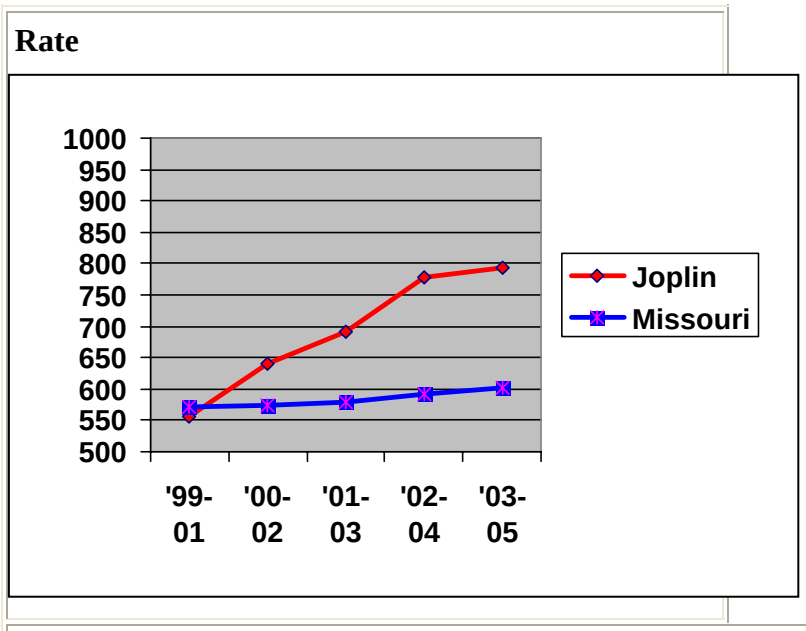
- A high rate of atrial septal defect was primarily responsible for the increased Joplin heart defects rate of 120.2 per 10,000 Joplin live births in contrast to 85.1 per 10,000 for Missouri
- The excess in the 'Other Circulatory and Respiratory Anomalies' category for Joplin is largely the result of the high number of infants born with ductus arteriosus defects (73.6 v 50.4 per 10,000 for Joplin and Missouri, respectively).
- The high rate of genital organ anomalies for Joplin is almost solely the result of the high rate of undescended testicles. For Joplin the rate has been 110.4 per 10,000 births, more than double the state rate of 44.7 per 10,000 for Missouri.

There has been an **alarming increase** in the rate of birth defects in Joplin in recent years:

Infant Health Profile for Joplin Residents[6]

Birth Defects per 10,000

Three-Year Moving Average Rates



Trend Analysis:

- **Joplin rate trend shows a statistically significant increase.**

Three-Year Moving Average Rates					
	Years				
	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005
Joplin	557.0	639.1	692.0	777.8	793.1
Missouri	571.0	573.7	579.3	591.6	601.9

As depicted in the above table of three-year moving average rates for a recent six year period, the gap in birth defect rates between Joplin and the state rose from 14 to 191.2. **This is more than a ten fold increase in the gap.** This clearly points to a critical need to determine what is happening to babies being born to the residents of Joplin.

6 http://www.dhss.mo.gov/ASPsInfant/Trend.php?cnty=525&cod=0210234300&trnd=7.18214&trnda=58.32143&dtdb=infantdb&cndb=cntydb&lbdbs=inflabldb&pth=/web/data2/

For most diseases profiled by the Missouri Department of Health and Senior Services, Joplin residents have a significantly higher rate of death, hospitalization and emergency room visits when compared with all Missouri residents:

Chronic Disease Profile for Joplin Residents [7]

	Years	Number of Events	Joplin Age-Adjusted Rate	Significantly Different than the State		Age-Adjusted State Rate	Trend Lines	Advanced Graphics
Heart Disease								
Deaths	1996-2006	2,212	350.5	H		271.9	▫	×
Hospitalizations	2002-2006	5,911	228.3	H		174.0	▫	×
Emergency Room Visits	2002-2006	4,468	19.3	H		12.5	▫	×
Ischemic Heart Disease								
Deaths	1996-2006	1,731	274.8	H		192.6	▫	×
Hospitalizations	2002-2006	1,946	76.1	H		68.9	▫	×
Emergency Room Visits	2002-2006	43	0.2	L		1.0		×
Stroke/Other Cerebrovascular Disease								
Deaths	1996-2006	488	73.3	H		60.0	▫	×
Hospitalizations	2002-2006	1,322	48.4	H		33.4	▫	×
Emergency Room Visits	2002-2006	172	0.7	L		0.8	▫	×
All Cancers (Malignant Neoplasms)								
Deaths	1996-2006	1,314	225.3	H		204.4	▫	×
Hospitalizations	2002-2006	1,254	49.6	H		42.7	▫	×
Colorectal Cancer								

[7] http://www.dhss.mo.gov/ASPsChronicDisease/Main.php?cnty=525

Deaths	1996-2006	133	22.0	N/S		20.7	▫	×
Hospitalizations	2002-2006	158	6.1	N/S		5.4	▫	×
Colon and Rectum Cancer (SEER)								
Deaths	1996-2006	131	21.6	N/S		20.7	▫	×
Lung Cancer (SEER)								
Deaths	1996-2006	414	72.5	H		63.4	▫	×
Hospitalizations	2002-2006	200	7.9	H		5.6	▫	×
Breast Cancer								
Deaths	1996-2006	95	16.8	N/S		15.2		×
Hospitalizations	2002-2006	109	4.4	H		2.7	▫	×
Cervical Cancer								
Deaths	1996-2006	6	1.2*	N/S		1.5		×
Hospitalizations	2002-2006	31	1.5	H		0.9		×
Prostate Cancer								
Deaths	1996-2006	50	7.7	N/S		9.9		×
Hospitalizations	2002-2006	67	2.6	N/S		2.8	▫	×
Diabetes Mellitus								
Deaths	1996-2006	147	24.7	N/S		24.6	▫	×
Hospitalizations	2002-2006	589	25.0	H		17.4	▫	×
Emergency Room Visits	2002-2006	659	2.9	H		1.5	▫	×
Chronic Obstructive Pulmonary Disease (COPD) Excluding Asthma								
Deaths	1996-2006	452	72.7	H		45.4	▫	×
Hospitalizations	2002-2006	1,187	47.0	H		22.9	▫	×

Emergency Room Visits	2002-2006	2,292	9.8	H		5.1	▣	×
Asthma								
Deaths	1996-2006	9	1.6*	N/S		1.4		×
Hospitalizations	2002-2006	519	22.4	H		13.5	▣	×
Emergency Room Visits	2002-2006	2,638	11.5	H		5.3	▣	×
Smoking-Attributable (Estimated)								
Deaths	1996-2006	1,253	212.2	H		157.6	▣	×
Arthritis/Lupus								
Deaths	1996-2006	37	5.9	H		3.6		×
Hospitalizations	2002-2006	1,052	41.7	H		38.1	▣	×
Emergency Room Visits	2002-2006	4,796	20.9	H		8.3	▣	×

Death rates are per year per 100,000 population and are age-adjusted to the U.S. 2000 standard population.
Hospitalization rates are per year per 10,000 population and are age-adjusted to the U.S. 2000 standard population.
Emergency Room rates are per year per 1,000 population and are age-adjusted to the U.S. 2000 standard population.

* Fewer than 20 events in numerator; rate is unstable.

▣Trends are available only if each 3-year period of the moving average has an average of 20 or more events.

Download Profile
Download 3-Year Moving Average Rates

Conclusion and Call for an Investigation

The United Steelworkers and allied public health organizations believe the preceding information from the Missouri Department of Health and Senior Services speaks loud and clear for itself. The residents of Joplin, Missouri, including USW members employed by EaglePicher, are at a significantly increased risk of various chronic diseases and birth defects. What the data does not explain is why they are at this increased risk.

USW, joining with experts from public health organizations, demands an immediate investigation by appropriate state and/or federal authorities into why residents of Joplin, Missouri are at increased health risks as detailed above, and what can be done to mitigate these risks.

At a minimum, the investigation should seek to:

- Determine why the rate of birth defects in Joplin appears to be significantly higher than in Jasper County and in Missouri overall;
- Explore potential causes for the trend of increased incidence of birth defects reported in Joplin since 1999;
- Examine existing data to determine possible clusters of birth defects and chronic diseases, and if confirmed, explore possible causes;
- Determine why the death rate from a host of chronic diseases appears to be significantly higher in Joplin than in the rest of Missouri.

The level of monitoring should also be immediately increased to improve understanding of pollution levels and whether Jasper County meets National Ambient Air Quality Standards and other environmental standards, including drinking water standards.

Finally, Joplin has a long history of lead mining and smelting. Although this mining and smelting has ceased, it created a legacy of pollution, some of which has been cleaned up. Lead causes a wide range of diseases and birth defects, and other contaminants resulting from smelting do as well. The investigation we are calling for should include an evaluation of the adequacy of the lead mining/smelting legacy-pollution cleanup with specific attention given to lingering soil and water contamination.